ENGINEERING NEWS-RECORD

APRIL 3, 1958

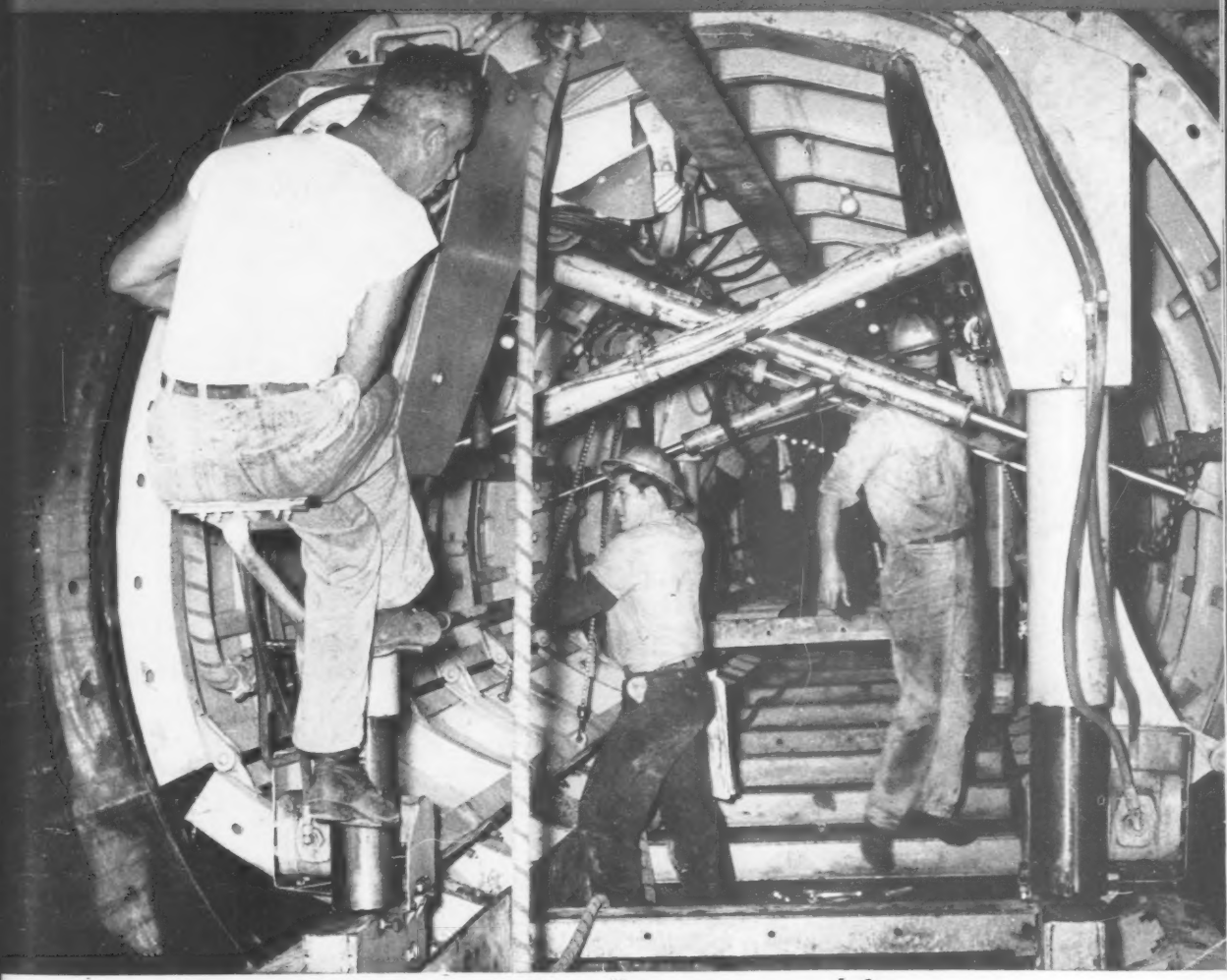
PRICE 50 CENTS

CONTENTS ON PAGE 17

MICH. STATE LIBRARY

APR 10 1958

- Machine tool warehouse was a mine p. 37
- Spraying speeds ceiling plastering p. 47



"Operator" on a perch collapses tunnel forms p. 43

A McGRAW-HILL PUBLICATION

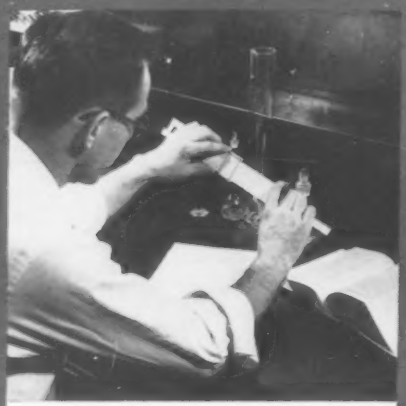
MICH STATE LIBRARY
LANSING MICH 13

1 Analytical weighing of specimens prior to testing

2 Steam condensate corrosion test

3 Cleaning specimens with inhibited hydrochloric acid

4 Second analytical weighing to determine corrosion weight loss



5 Calculation and statistical analysis of laboratory test results

6 Final examination of specimens under low power magnification

Extensive testing program proves new 4-D Wrought Iron more corrosion-resistant than ferrous substitutes

Test results from the Byers Research Laboratory lend documentary support to the superiority of new 4-D Wrought Iron—over standard Wrought Iron as well as ferrous substitutes.

Convincing case-history service records are now further substantiated by the conclusive findings of our metallurgical staff. Some typical results of this testing program are presented in the chart at right.

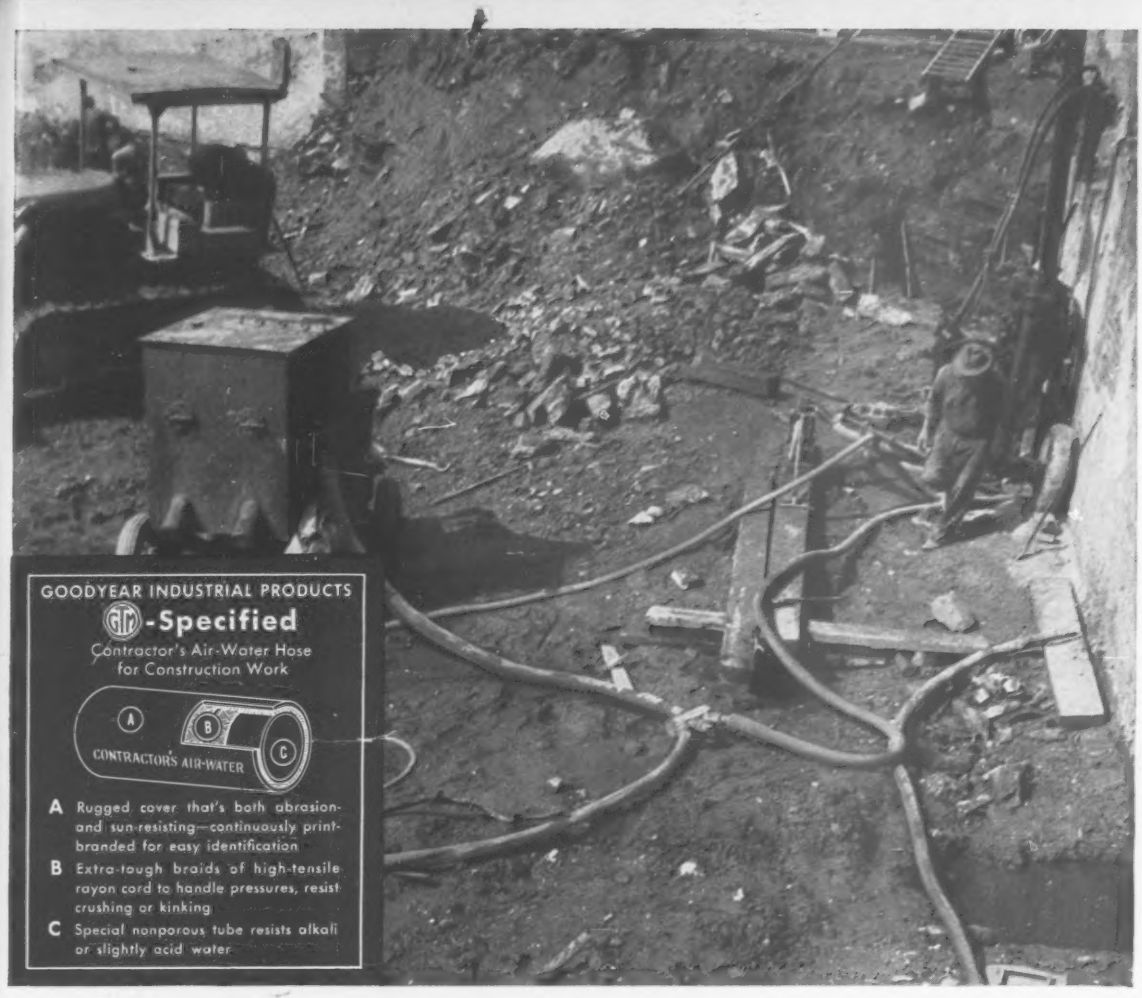
The Byers field service representative will be pleased to relate these test results to your corrosive applications. Write us for helpful literature on new 4-D Wrought Iron. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS WROUGHT IRON

Comparative Analysis of 4-D Wrought Iron Corrosion Tests

Tests	4-D Wrought Iron	Standard Wrought Iron	Ferrous Substitutes
Severe industrial atmospheric continued exposure 17 years	Corrosion weight loss 540 grams/sq. ft.	Corrosion weight loss 655 grams/sq. ft.	Not included in test
Steam condensate return line	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 10 years (still in service)	Complete failure after 2 years
Aerated salt water—5 weeks (Short term test—points indicate 4-D Wrought Iron curve flattening out at much lower rate of attack)	Corrosion weight loss 146 mg/sq. in.	Corrosion weight loss 170 mg/sq. in.	Corrosion wt. loss 226 mg/sq. in.
Brine piping	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 23 years (still in service)	Complete failure after 7 years
Salt water, Gulf of Mexico ⅛ inch plate—17 years	Corrosion weight loss 4 mills/years (minimum plate thickness now $\frac{1}{16}$") Still in excellent condition	Not included in test	Corrosion weight loss 30 mills/years; plate badly pitted, perforated
Downspout	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures in 29 years (Still in service)	Complete failure after 18 years

*In this application no long term test data yet available on 4-D Wrought Iron. Results shown are derived from short term tests.


GOODYEAR INDUSTRIAL PRODUCTS
G-Specified
Contractor's Air-Water Hose
for Construction Work
A
B
C
CONTRACTOR'S AIR-WATER
A Rugged cover that's both abrasion- and sun-resisting—continuously print-branded for easy identification
B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking
C Special nonporous tube resists alkali or slightly acid water

How to keep things flowing on any construction job

Keeping things flowing is no little trick—if you don't have completely dependable hose for every need.

Reason enough, then, that you should look into the Goodyear built-for-the-job line. Contractor's Air-Water Hose, for example, will suit many of your everyday requirements—handling air or water interchangeably—up to 200 psi.

And for more specialized jobs, there are specialized hoses recommended by the G.T.M.—Goodyear Technical Man: FLEXSTEEL for heavy-duty drilling or grouting. Large-bore STYLE 3752 Water Suction and Discharge Hose. HY-PRESSURE SAFETY Welding Hose. Style M-150 Steam Hose. Style M Concrete Discharge Hose.

No matter which you choose, you can depend on one thing: You're getting a Goodyear super-quality hose that will give you super-quality performance – *at lower cost and with a lower inventory than ever before.* Check the complete line with your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

Flexsteel, Hy-Pressure –T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

HOSE FOR ALL INDUSTRY by

GOODYEAR

60th GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

Commercial Forming

Symons Forms Help Contractor Speed Work on Bank Job

Used to Pour Foundation, Vaults & Retaining Walls

Designer and builder, Western Bank Contractors, Inc., Kansas City, Mo., used concrete to provide new look for banking in Kansas City. 4,000 square feet of Symons Steel-Ply Forms were used to speed construction of the foundation, vaults & retaining walls on this new $250,000 Community State Bank of Kansas City, Mo.

Initial cost of Symons Steel-Ply Forms is higher than Wood-Ply Forms, but this is more than offset by the

many reuses possible. Low-cost-per-use plus easier handling and stacking are reasons for the increasing demand.

Symons Steel-Ply Forms can be rented with purchase option. Steel-Ply Form Catalog FREE upon request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Avenue, Dept. D-8

Chicago 39, Illinois

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.

Senior Editors, Frederick S. Merritt, Howard Jacoby

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiero, Louis A. Volse

Buildings, Bridges—Structures
Frederick S. Merritt
James B. Sullivan, Marianne Stern

Rivers, Sanitation—Water Resources
Howard Jacoby
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Stuart D. Boynton

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Laurens L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Stanley C. Jensen, *Chief*
Barbara Lamb
Evelyn Stepic
Shirley Winterton
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Horn, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra
Diane Tartaglia, Marie Morawalk
James Webber, Ruth Carlson, *Economics*
Marie Roessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Gierat, Rene Hay, Patricia Witschger
Elise Delano

Consulting Editors: Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: Donald S. Robertson

Circulation Manager: Edward F. Bressler

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Clyde C. Henning, Sam J. Justice, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Morton A. Reichek, V. Craig Richter, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureau: Cleveland—55 Public Square, Cleveland 13. William G. Meldrum, Michelle M. Perry; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Pacific Coast**—68 Post Street, San Francisco 4—Margaret Ralston, Chief, Jenness Keene, Sue Johnson, 1125 West 6th Ave., Los Angeles 17—John K. Shinn, Michael J. Murphy; **Seattle**—6040 Fifth Ave., N. E., Ray Bloomberg; **Southeastern**—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Southwestern**—901 Vaughn Bldg., Dallas, Kemp Anderson, Jr., Chief, Lorraine Smith.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—William J. Coughlin; **Paris**—Robert E. Farrell; **Rio de Janeiro**—Peter Weaver; **Mexico City**—Jack Kearney; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Dan Kurzman; **Melbourne**—Alicja Grobtuch. Correspondents in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 160, No. 14, APRIL 3, 1958

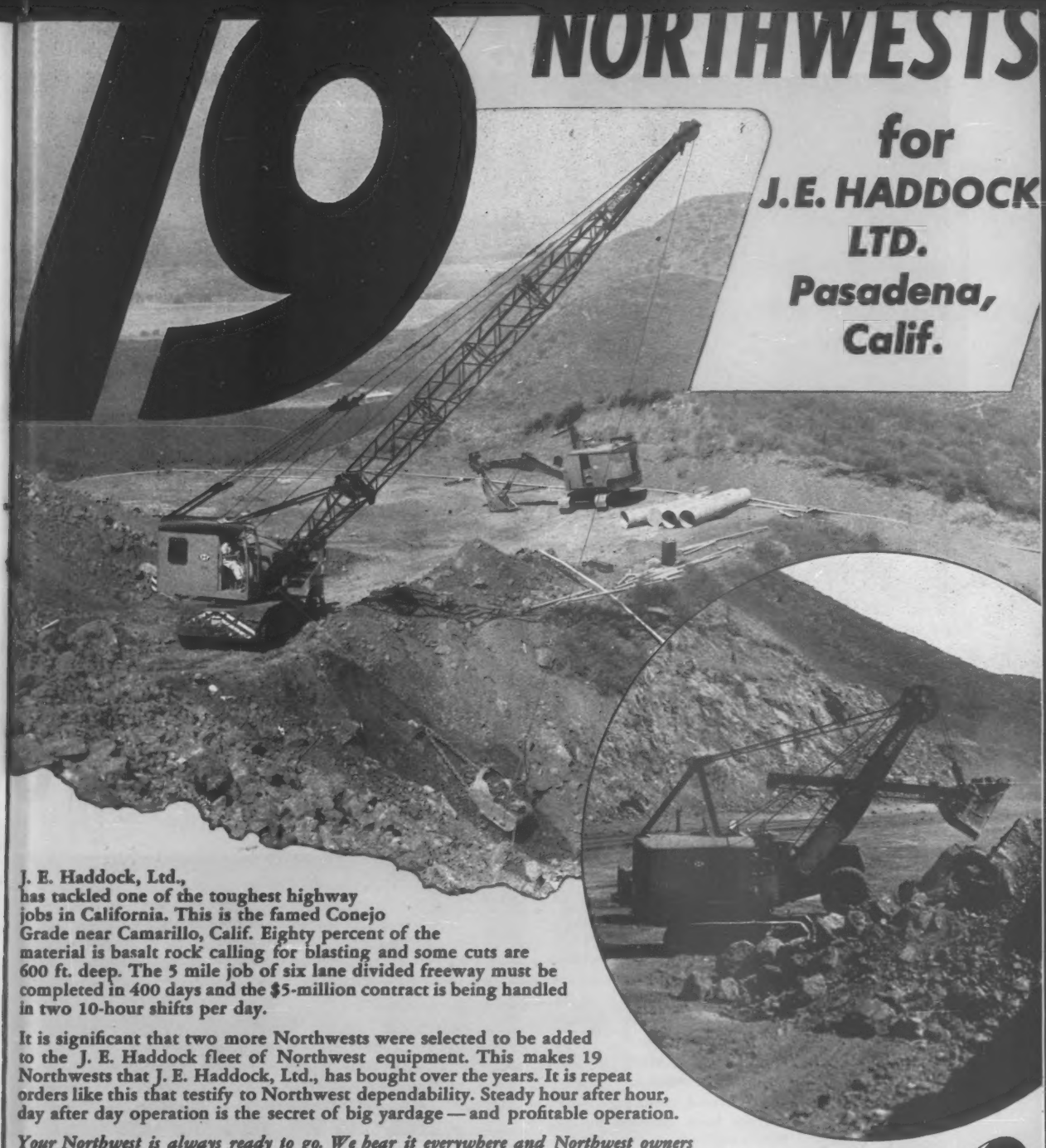
Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices. McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

© Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

19 NORTHWESTS for J.E. HADDOCK LTD. Pasadena, Calif.



J. E. Haddock, Ltd., has tackled one of the toughest highway jobs in California. This is the famed Conejo Grade near Camarillo, Calif. Eighty percent of the material is basalt rock calling for blasting and some cuts are 600 ft. deep. The 5 mile job of six lane divided freeway must be completed in 400 days and the $5-million contract is being handled in two 10-hour shifts per day.

It is significant that two more Northwests were selected to be added to the J. E. Haddock fleet of Northwest equipment. This makes 19 Northwests that J. E. Haddock, Ltd., has bought over the years. It is repeat orders like this that testify to Northwest dependability. Steady hour after hour, day after day operation is the secret of big yardage — and profitable operation.

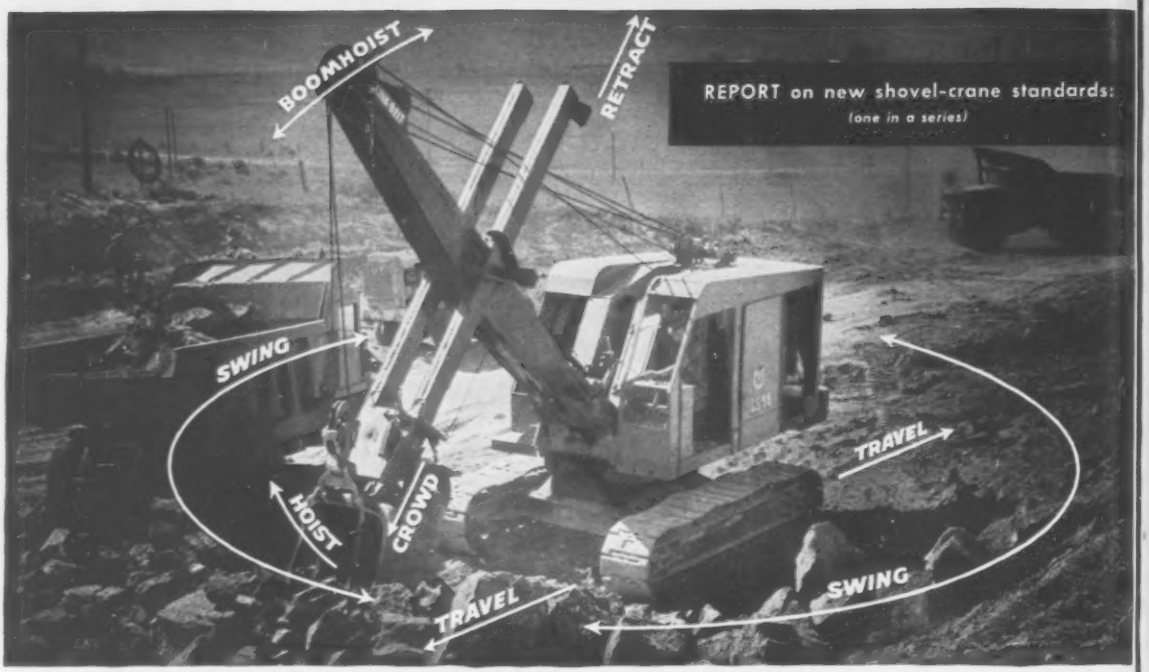
Your Northwest is always ready to go. We hear it everywhere and Northwest owners will tell you so. Northwest owners get the output you are looking for. Follow the repeat order buyers and make your next machine a Northwest.

NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

NORTHWEST *Always Ready to* GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity



ALL OPERATIONS ARE COMPLETELY INDEPENDENT — In addition to eliminating shifting time, *Independent-Travel* allows the operator to swing and hoist the load while travelling. Whether to save time or to jockey the boom around obstacles, the operator can swing the boom while his machine is travelling in either direction. This optional feature can be used with any front-end attachment.

Getting 9 hours' output in 8

Independent-Swing-and-Travel is available on 11 Link-Belt Speeder models. Eliminates shifting . . . saves 20-30 seconds each move

Link-Belt Speeder users are setting new high-production standards by equipping their machines with *Independent-Swing-and-Travel.* Why? It eliminates time losses ordinarily occurring when the operator shifts from swing to travel and from travel to swing. With *Independent-Travel* shifts are eliminated and the machine can swing and travel simultaneously . . . you can jockey the boom around obstacles in tight quarters, move away from bank cave-ins in split seconds!

If you'd like complete details, proof that *Independent-Travel* can up output . . . cut maintenance and spare parts costs, too — see your Link-Belt Speeder distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

MORE USABLE HORSEPOWER — Size for size, Link-Belt Speeder shovel-cranes utilize more of the engines' available horsepower. This bonus pays off in added power at the bucket teeth, greater line pull plus extra power to swing, hoist and travel. Although it gets more usable power and line pull out of the same engines used in other shovel-cranes, a Link-Belt Speeder remains well within the engine manufacturers' recommended operating speeds.

14,324

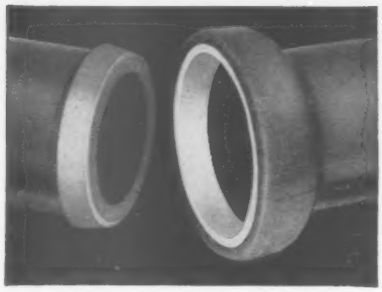
It's time to compare . . . with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

you save money SEVEN WAYS with longer, stronger AMVIT Clay Pipe

Outstanding Mechanical Joint
on pipe 4 feet long or over
Available in 4" through 24" diameters



More than 200 major installations have been completed with outstanding results since Amvit Jointed Clay Pipe was introduced in 1955.

Such pioneer cities as Ann Arbor, Michigan, Dayton, Ohio, Camden, New Jersey have installed their second and third Amvit sanitary lines.

A mechanical joint designed for quick, low-cost installation, Amvit* will give you lower cost-in-place. Here's how:

1. QUICK INSTALLATION SAVES LABOR

No other materials such as caulking, joint compound, hot pots, or ladles are needed to make the Amvit joint. The joint is on the pipe delivered to the job ready for use. Just push the pipe together and the joint is complete.

2. IMMEDIATE BACKFILLING

You can backfill as soon as the line is completed. Barricades can be removed and streets opened days sooner.

3. QUICK TESTING

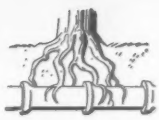
No need to wait days to see if a line has passed test. A look at the completed joint will tell. Thus, engineers can inspect and accept the line allowing the contractor to receive payment quicker.

4. CONTROLS INFILTRATION

Field tests from completed installations show that infiltration can be definitely controlled. Engineers can, thus, reduce infiltration specifications, use smaller diameter pipe and save in material cost.

5. ROOT PROOF

Amvit is a compression joint on the ball and socket principle. The surfaces of both bell and spigot are in uniform compression preventing root penetration.



6. BETTER FLOW, LESS MAINTENANCE

The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing. Because the joint is really tight, no foreign matter such as dirt, sand and stones can possibly enter the line.

7. COMPLETE FITTINGS

Amvit is furnished on all standard fittings, as well as pipe. This will permit a uniformly tight line from house wall to treatment plant.

Amvit Jointed Clay Pipe, in sizes 4" through 24" together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information on how Amvit can help cut your sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

*T. M. Registered. Patents Pending

SINCE 1900

AMERICAN

American Vitrified Products Company

CLEVELAND OHIO

MANUFACTURERS OF: Clay Pipe, Five Liners, Clay Liner Plates and Concrete Pipe.

Plants Across the Nation . . . Brazil, Indiana · Chicago, Illinois · Cleveland, Ohio · Crawfordsville, Indiana · Detroit, Michigan · East Liverpool, Ohio · Fenton, Michigan · Grand Ledge, Michigan · Lisbon, Ohio · Los Angeles, California · Milwaukee, Wisconsin · South Bend, Indiana · Uhrichsville, Ohio

This Shovel Makes Good Operators Look Better!

The 2½-yd. Lorain-85A Shovel has two vitally important features—available on no other make of shovel—that will send any operator's production figures soaring, with less effort, less fatigue, easier, smoother. They are:

"JOY-STICK" AIR CONTROLS

These 2 levers, through metering valves that retain the old-time normal "feel" of the machine, control all turntable operations through air power. There are fewer levers—fewer motions. Just think what this ease and simplicity of operation means in increased production. Full "Air-Ease" Power Control of crawler travel, steering and tread-travel lock also are provided.

"SHEAR-BALL" MOUNTING

Like a huge, sealed "ball bearing," this revolutionary turntable mounting eliminates forever all adjustment, maintenance and lubrication problems of old-fashioned center pin and roller designs . . . means still more time-saving on the job, more production. Field tested for more than 7 years, the Lorain "Shear-Ball" is real "reliability" in action.

There are many other Lorain-85A features you'll want to know about. Your nearby Thew-Lorain Distributor can tell them to you. And ask him about the on-the-spot Lorain parts and service facilities that are such an important plus value when you buy Lorain. See him soon.

THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.

LORAIN 85A

THEW LORAIN®

reliability in action

2830
S817

We've reserved a copy for you

PEERLESS PUMP DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION
301 West Avenue 26, Los Angeles 31, California

Please send ____ copies of:
☐ Bulletin No. EM-79, MECHANICAL CONSIDERATIONS IN PUMP DESIGN
☐ Bulletin No. B-1608, TYPE DL-DM CHEMICAL PROCESS PUMPS

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

RESUME OF ORIGINAL RESEARCH ON PUMP RADIAL LOADS AND STRESSES

Describing the cause, effect, and cure of radial thrust forces on pump impellers, bearings, wear rings, seals, stuffing boxes and the shaft itself, the booklet "MECHANICAL CONSIDERATIONS IN PUMP DESIGN" covers the basic types of process pumps, and discusses the load effects on each. Eight pages, profusely illustrated, this informative reference booklet is now available to engineers and pump buyers. For your copy, send coupon today.

ENR
fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Peerless Pump Division
Plants: LOS ANGELES 31, CALIFORNIA and INDIANAPOLIS 8, INDIANA

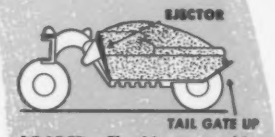
PEERLESS PUMPS

Making earthmoving PROFIT history from New England to New Zealand

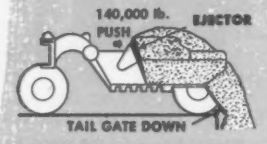
YUBA Movall

Three of a fleet of ten Yuba Movalls stripping coal overburden at Huntley, New Zealand. These 32-ton capacity units are powered by AC T-360 prime movers.

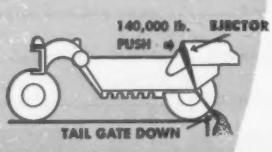
Two 32-ton Yuba Movalls replaced five conventional heavy-duty end dumps on a 5 mile section of Massachusetts Turnpike involving movement of 2,725,000 yards of rock and earth. These are powered by Cat DW-21s.



LOADED — The big target, big capacity body carries its load low, maintaining high ground clearance since frame and body are integral and compact.



DUMPING — Level body offers no gravity resistance, with potential 140,000 lb. ejector push assuring complete positive discharge with minimum use of power.



EMPTY — Sides and bottom are scraped clean, eliminating need for "mucking out" or decreasing capacity for next full load. Complete ejection takes only 11 to 14 seconds.

MA-802

The rugged multi-purpose high speed hauler that outperforms rear-dumps and bottom-dumps on more types of off-highway jobs

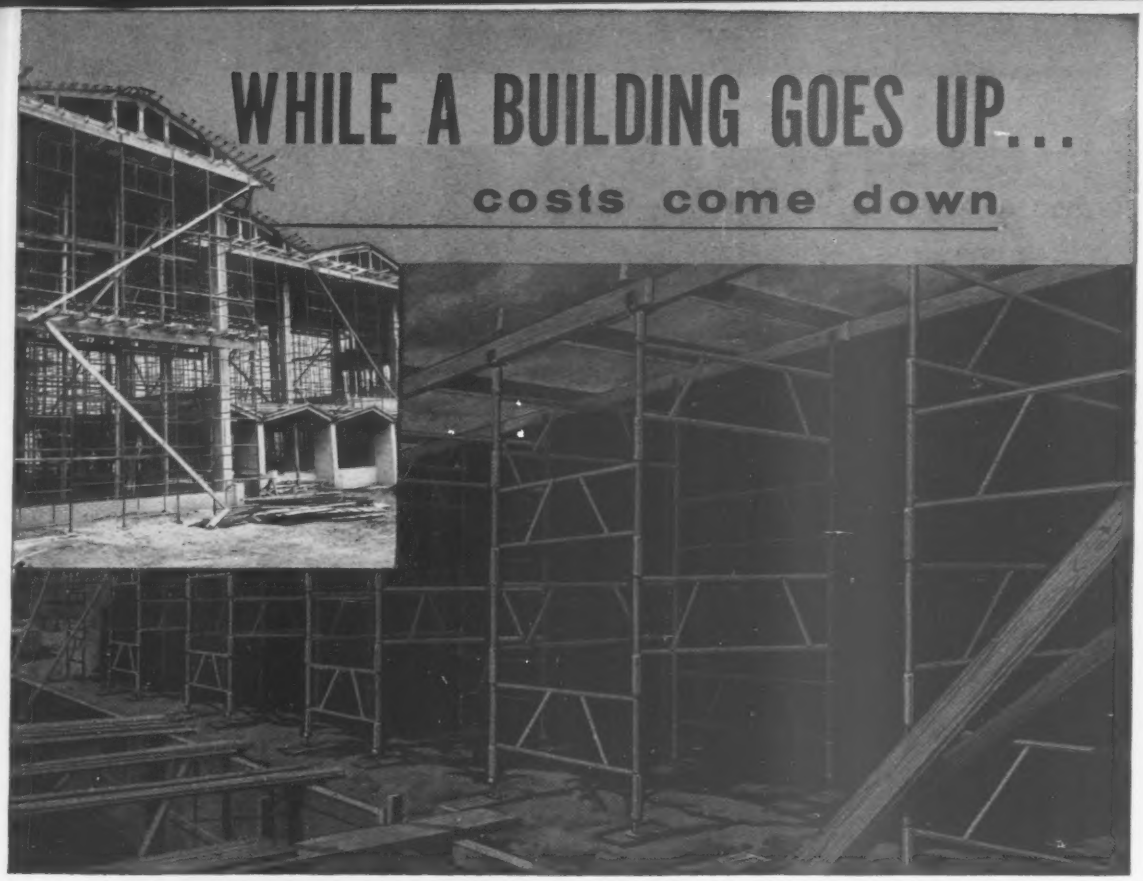
These typical jobs illustrate Yuba Movall versatility. Exclusive level action positive ejector discharges heaviest rock, frozen muck, or any top loaded material, or spreads on the fly. High clearance, short turning radius, full stability during all operations, big tire flotation and traction, big capacity—these add up to more yards, less downtime, bigger year 'round profits. For full information, see your Allis-Chalmers, Caterpillar, or International Harvester Dealer —or phone or write Yuba direct.

YUBA MANUFACTURING DIVISION

YUBA

704 EAST H STREET • BENICIA, CALIFORNIA

YUBA CONSOLIDATED INDUSTRIES, INC.



Brainard 4S Engineered Shoring System

Brainard's 4S Engineered Shoring System was designed to fill a need in the construction industry for a quick, simple and inexpensive method of shoring up concrete slabs in all kinds of industrial and commercial structures. Brainard's Engineered Shoring System is composed of a minimum number of parts. Its combined strength and versatility can save substantial construction money for you. Look at these 4S advantages:

SAFE . . . Designed to meet all load requirements for concrete reinforced construction.

STURDY . . . Made of quality welded tubing—parts can be used and reused for greater construction profits.

SIMPLIFIED . . . Engineered into unit tower construction so that the most complex shoring jobs can be handled from any combination of towers.

SPEEDY . . . Designed with slip-fit construction—no bolts, screws nor other fasteners required. One man can erect shoring tower in a matter of minutes—a great time saving feature.

Brainard Specialty Products
Griswold Street, Warren, Ohio

☐ Please send additional information on Brainard's Engineered Shoring.

☐ Please have a representative call.

☐ I am interested in Brainard's distributor franchise for shoring.

Name_____

Company_____

Address_____

492

Brainard Specialty Products

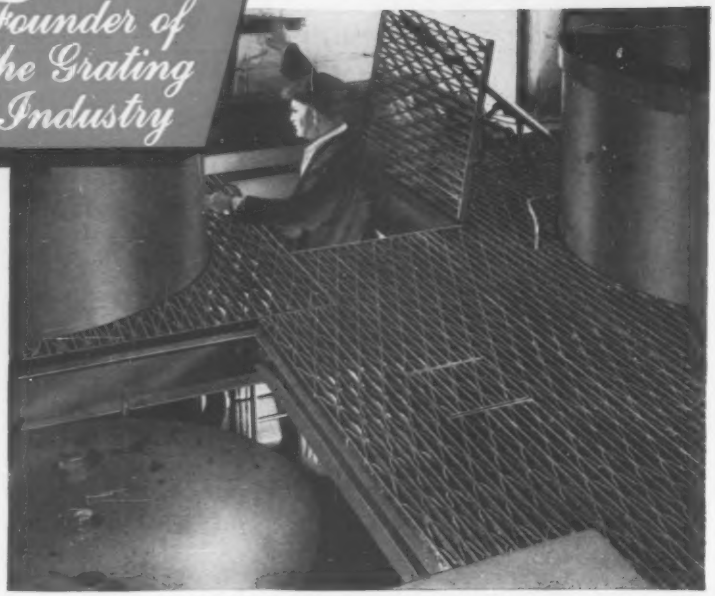
The Brainard Steel Division of **SHARON STEEL**

SHARON STEEL CORPORATION

GRISWOLD STREET WARREN, OHIO

IRVING

Founder of the Grating Industry



SOME OF THE THOUSANDS OF USES FOR IRVING GRATING:

Open Steel Flooring
Safety Treads
Floor Armoring
Walkways
Trench Covers
Balconies
Loading Platforms
Vestibule Mats
Sun Deflectors
Bridge Decking
Draingrates
Contour Retainer Grid for Refractory Shells

SOME OF THE ADVANTAGES:

Self-Cleaning
Self-Draining
Permits passage of light and air
Lightweight
Strong
Will last indefinitely
Fireproof
Resists Corrosion
Simple to Install
Minimum maintenance
Custom built

WHATEVER YOU ARE BUILDING

? INDUSTRIAL PLANTS
? POWER HOUSES
? PUBLIC UTILITIES
? PUBLIC BUILDINGS
? COMMERCIAL BUILDINGS
? PETRO-CHEMICAL UNITS
? BRIDGES
? HIGHWAYS
? SHIPS
? HOUSING

. . . there may be a grating application that can save you time and money and improve the project. As founders of the grating industry, with over half a century of experience, the Irving Grating Company is well qualified to recommend designs to help you solve specific problems.

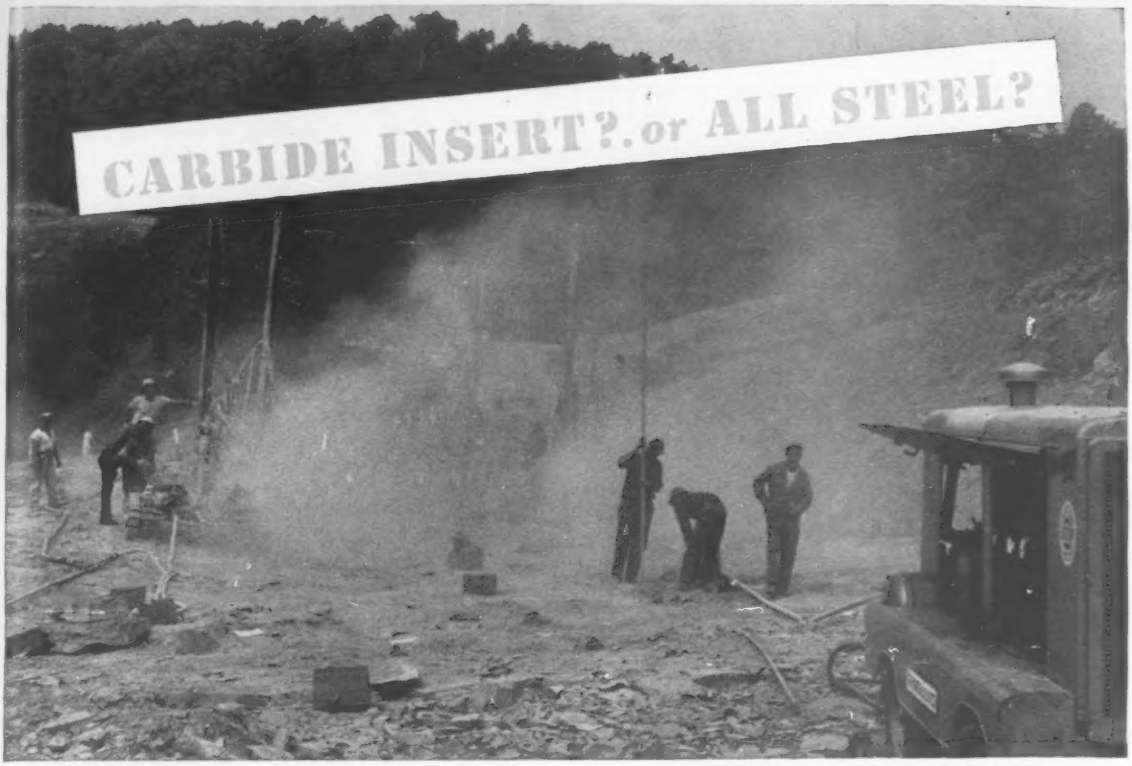
We are manufacturers of Riveted, Pressure-locked and Welded Gratings in Steel, Aluminum and other metals.

IRVICO®
ESTABLISHED 1902

IRVING SUBWAY GRATING CO., Inc.
"A FITTING GRATING FOR EVERY PURPOSE"

Offices and Plants at:
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 20, CALIFORNIA

Representatives in Canada, Mexico and South Africa



LOCATION: Route 40, Martins Mountain, Cumberland, Md. **OPERATING CONDITIONS:** Medium limestone.

The Bero Construction Corp. and the Via Company Inc. relocate Md. Route 40, cut drilling costs with TIMKEN® carbide insert bits

IN relocating 2.4 miles of Route 40 at Martins Mountain east of Cumberland, Md., Via Company Inc. had to drill through limestone. To get maximum production, keep bit cost per foot-of-hole at a minimum, they used Timken® carbide insert bits.

For hard, abrasive ground, Timken carbide insert bits give you greatest economies. They permit faster drilling with fewer bit changes.

But carbide insert bits may not do the most economical job in every case. In ordinary, less abrasive ground, Timken all steel multi-use bits save the most. When correctly controlled and reconditioned, Timken all steel multi-use bits lower your cost per foot-of-hole when full increments of steel can be drilled out.

Both types of Timken bits save drilling time because they are interchangeable in the same thread series. They let you switch bits on the same drill steel as the ground changes, right on the job. And the special shoulder union of Timken bits protects against drilling impact, adds to bit life.

Timken rock bits are made from our own electric furnace fine alloy steel. We're the only American rock bit manufacturer that makes its own steel. Let our experts help you select the best bit type for your particular drilling job. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded all steel multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit ...for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

Reader Comment

Runway Preparation Right?

SIR—In "A Lesson in How to Make Good Use of Poor Materials" (ENR Nov. 14, 1957, p. 42) appears the statement: "the material, as placed on the job, although marginal, met the tests for frost susceptibility (less than 3% finer than 0.02 mm).

I wish to take exception to this statement. Natural soil materials possess a potential susceptibility to frost action as soon as they contain amounts greater than 10% finer than the 0.074 mm size, regardless of whether or not they contain more or less than 3% finer than 0.02 mm. It is true, however, that when amounts finer than 0.02 mm are present in a soil material frost susceptibility is more prevalent only when additional amounts occur finer than 0.074 mm grain sizes.

Also on p. 42, it is implied that the use of rubber-tired compactors utilized after the soil material was redistributed in 6 in. "lifts" instead of 18 in. "lifts" would tend to provide a mechanical means of causing grain size stratification. This is not the case. Respreading with the aid of a mixer would tend to produce a more uniformly mixed soil (by grain sizes), then, increasing the relative density by compacting in 6 in. lifts instead of 18 in. lifts would decrease the soil material's permeability, causing less chance for localized "spongy" or soft pockets to occur, thus minimizing the differential in supporting values of the base materials. This in turn would provide uniform supporting value for the pavement and less opportunity of pavement failure.

NORMAN J. COHEN
Senior Materials Engineer
Louis Berger and Associates,
Consulting Engineers
Orange, N. J.

. . . Army's Answer

SIR—I have read with interest Mr. Cohen's comments on the article, "A Lesson in How to Get Good Use of Poor Materials" (ENR Nov. 14, 1957, p. 42). With respect to Mr. Berger's statement regarding the criterion for frost susceptible soil, Chapter 4, Airfield Pavement Design, Frost Conditions, of Part XII, Engineering Manual for Military Construction dated October, 1954, defines frost susceptible soils as "Soils in which significant ice segregation will occur when the requisite moisture and freezing conditions are present." It further states: "The potential intensity of ice segregation in a soil is dependent to a large degree on its voide sizes and may be expressed as an empirical function of grain size as follows: Inorganic soils containing 3% or more of grains finer than 0.02 mm in diameter are generally frost susceptible. Although uniform sandy soils may have as high as 10% of grains by weight finer than 0.02 mm without being frost susceptible, their tendency to occur interbedded with other soils makes it generally impractical to consider them separately."

The 0.02 mm limiting grain size defining the boundary between frost susceptible and non-frost susceptible soils was first adopted by the Corps of Engineers in 1943 from studies by Dr. A. Casagrande conducted at the Massachusetts Institute of Technology and in many sections of New Hampshire in 1927-1929.

Continuing field and laboratory studies, initiated in 1944, by the Frosts Effects Laboratory of the U. S. Army Engineer Division, New England, have shown that the working rule of "3% finer than 0.02 mm" can reasonably be expected to insure low frost susceptibility. The rule is not intended to represent a point at which potential susceptibility to frost action to a level which is sufficiently low so that its effect on pavements will be negligible.

The studies of the Arctic Construction and Frost Effects Laboratory have also shown that the 200 mesh sieve size (0.074 mm) is not a satisfactory substitute for the 0.02 mm size for evaluation of frost susceptibility, although for soil of sufficiently consistent gradation the 200 mesh value is useful as an indicator of the approximate 0.02 mm value after a correlation has been established between the two sizes for the particular soil. These studies have involved freezing tests on a great many soils from a large number of locations across the United States and from Alaska, Canada, Greenland and Iceland. The characteristics of the soils actually used at Dow AFB were such that in the average material only about 6% could pass a No. 200 sieve without exceeding 3% smaller than 0.02 mm. Freezing tests also showed that specimens containing these limiting percentages were correctly described as "marginal" in that they were near the limit of acceptability with respect to frost activity. By contrast, and for example, freezing tests on a uniformly graded silty sand from another air base, having 20% passing the 200 mesh sieve and 2.5% finer than 0.02 mm have shown negligible ice segregation. These are not extreme cases.

The 0.02 mm criterion is admittedly an approximation, and the Corps of Engineers is carrying on a long range program of research aimed at devising a more precise measure of frost susceptibility. In the interim, as a means of obtaining greater precision, the Corps of Engineers follows the practice of performing laboratory freezing tests when use of soils of borderline frost susceptibility must be considered in design of important projects. Representative soils are sent to the Arctic Construction and Frost Effects Laboratory by Corps of Engineers field offices for performance of this test.

The writer concurs that respreading of the soil with the aid of pulvi-mixers would have tended to produce more uniform soil conditions than the adopted method of spreading in 6 in. layers. However, tests conducted at the site showed conclusively that manipulation and heavy rolling produced significant degradation of the soil with consequent increase in its frost susceptibility. Respreading of the previously placed soil in 6 in. layers not only substantially improved the uniformity of the soil but permitted required compaction to be obtained by relatively light weight rubber-tired rollers at low tire pressures, thus minimizing degradation. Although the rehandling and rolling increased the fines content of the soil somewhat, it is believed that pulvimixing would have produced a much greater increase. Tests performed on the redistributed and compacted material, which is confined to the lower 18 inches of the subbase, indicated that the increase in fines content (minus 0.074 mm sizes) was limited to about 1% by the procedures used and that satisfactory uniformity was obtained.

JOHN W. LESLIE
Chief, Engineering Division
New England Division
Corps of Engineers

CALENDAR

American Wood Preservers' Association, 54th annual convention, Statler-Hilton Hotel, Los Angeles, Calif., April 14-16.

American Institute of Steel Construction, annual national engineering conference, Chase-Park Plaza Hotel, St. Louis, Mo., April 17-18.

Southern Municipal and Industrial Waste Conference, 7th annual meeting Duke University, Durham, N. C. May 1-2.

Purdue Industrial Waste Conference, 13th annual meeting, Purdue Memorial Union Building, Lafayette, Ind., May 5-7.

Air Pollution Control Association, 51st annual meeting, Sheraton Hotel, Philadelphia, Pa., May 25-29.

American Association of Cost Engineers, annual meeting in cooperation with Case Institute of Technology, Cleveland, Ohio, June 16-18.

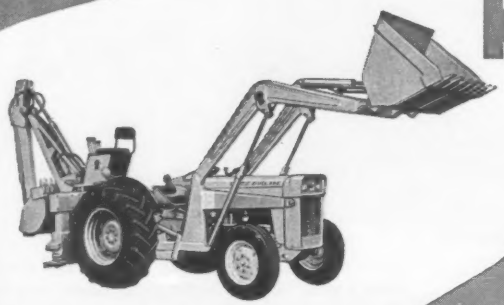
PRESENTING FOUR NEW INDUSTRIAL CHAMPIONS

BY

MASSEY-FERGUSON INDUSTRIAL EQUIPMENT

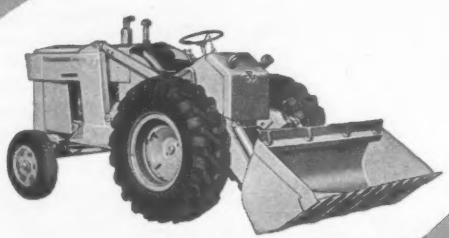
WORK BULL and DAVIS PRODUCTS

The Work Bull 303 with 500 Loader and Davis Backhoe

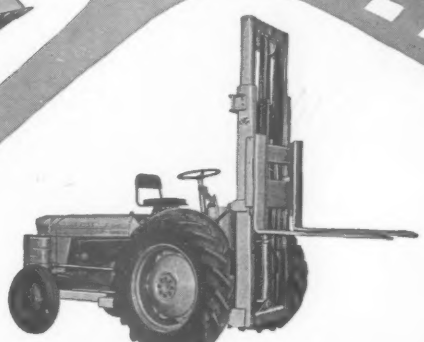


The Work Bull 202 with Matched Davis Loader and Backhoe

SEE HOW THESE VERSATILE POWER-MATCHED MACHINES SAVE ON MANPOWER AND EQUIPMENT EXPENDITURES



The Work Bull 1001 Multi-Purpose Tractor Loader



The Work Bull Fork Lift

MASSEY-HARRIS-FERGUSON, INC.

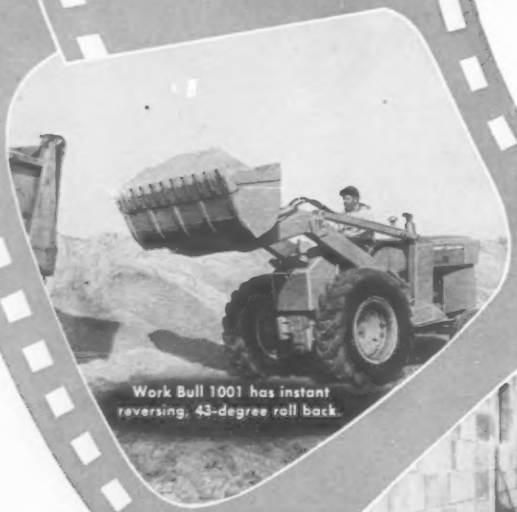
MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST ST. • WICHITA 13N, KANSAS

NEW WORK BULL and DAVIS

Integration of Work Bull 202 and Davis Loader gives greater reach, maneuverability, and "single-unit" efficiency.

Here's Massey-Ferguson Industrial Division's new line of industrial champions in the light and medium equipment field. All are designed to replace high-inventory, single-purpose machines — and at a fraction of the cost. Multiple, quick-change attachments are POWER-MATCHED to the basic tractor. You pick the power you need — and add the attachments you want. All from the same source. It will be the best investment you ever made in equipment!



Work Bull 1001 has instant reversing, 43-degree roll back.

Davis Backhoe digs flush or from center.

The Work Bull 500 Loader and 303 has telescopic reach.

LETS YOU PICK YOUR POWER TO MATCH YOUR PROJECT!

New WORK BULL 1001

Multi-Purpose Tractor Loader is convertible into eight different machines. You can change it in the field from a loader (⅞ cubic yard payload capacity) to a pick-up street sweeper, to a fork lift, angle dozer, crane, rotary broom, backhoe, or scarifier. This unit features 52 h. p. engine, instant reversing (without shifting), 43° bucket roll back at ground level, load-shock absorber, power steering, and torque converter.

New WORK BULL 202

Utility Industrial Tractor has 40 h. p., high-torque engine with amazing lugging power at low speeds. New industrial design permits extra maneuverability, vision, and control. It has more POWER-MATCHED attachments than any other tractor. Attachments include the famous Davis Loader-Backhoe and the Auburn Trencher. It beats anything in its price range.

New WORK BULL 303

Medium Range Industrial Tractor is designed for tough assignments that demand more power, more weight, and reserve stamina. It has 52 h. p. engine, instant reversing, torque converter, power steering, and new double-disc brakes.

New WORK BULL 500 LOADER

Work Bull 500 Loader with ¾ cubic yard payload capacity is specially matched to the Work Bull 303. It has direct line "bull-dozer" type thrust, but telescopic reach. Extra versatility is provided by pick-up street sweeper, crane, angle dozer, rotary broom, fork lift, and scarifier attachments. Davis Backhoe also fits directly to the loader frame.

New WORK BULL FORK LIFT

Work Bull Fork Lift has the power, stability, and flotation to be labeled the best material-handling device for either off or on hard surfaces. Controls are located at operator's finger-tips. It is equipped so you can make quick changeover from one attachment to the other without additional hydraulics. Attachments include standard tines, block forks with side-shift adjustment, hydraulic bucket, log hook, dozer blade, scrap grap, 20′ extension mast, bottled gas load clamp, and cotton bale clamp.

Matched DAVIS LOADER-BACKHOE

Davis Loader-Backhoe — The famous Davis Loader and Backhoe are specially matched to Work Bull 202. Loader attaches directly to the tractor which also has built-in pump drive and mounting. The Davis Backhoe fits directly to loader frame and can be attached or detached in less than five minutes. It is the only machine that can dig flush alongside a building — as well as do normal digging jobs. The Davis Loader, likewise, is highly versatile with many easy-to-change attachments.

Other ***Power-Matched Attachments*** for the Work Bull 202 and 303 tractors include a scarifier-scraper, post hole digger, mower, multi-purpose rear blade, soil scoop, cable layer, tipping trailer, cordwood saw, and telescoping wagon chasis.

Get the Full Story On How To Save Manpower and Equipment Expenditures
Write for this free copy of the 28-page, fully illustrated brochure on the complete Work Bull and Davis Line. Ask for Brochure G-4.

MASSEY-HARRIS-FERGUSON, INC.

MASSEY-FERGUSON INDUSTRIAL DIVISION
1009 SOUTH WEST ST. • WICHITA 13N, KANSAS

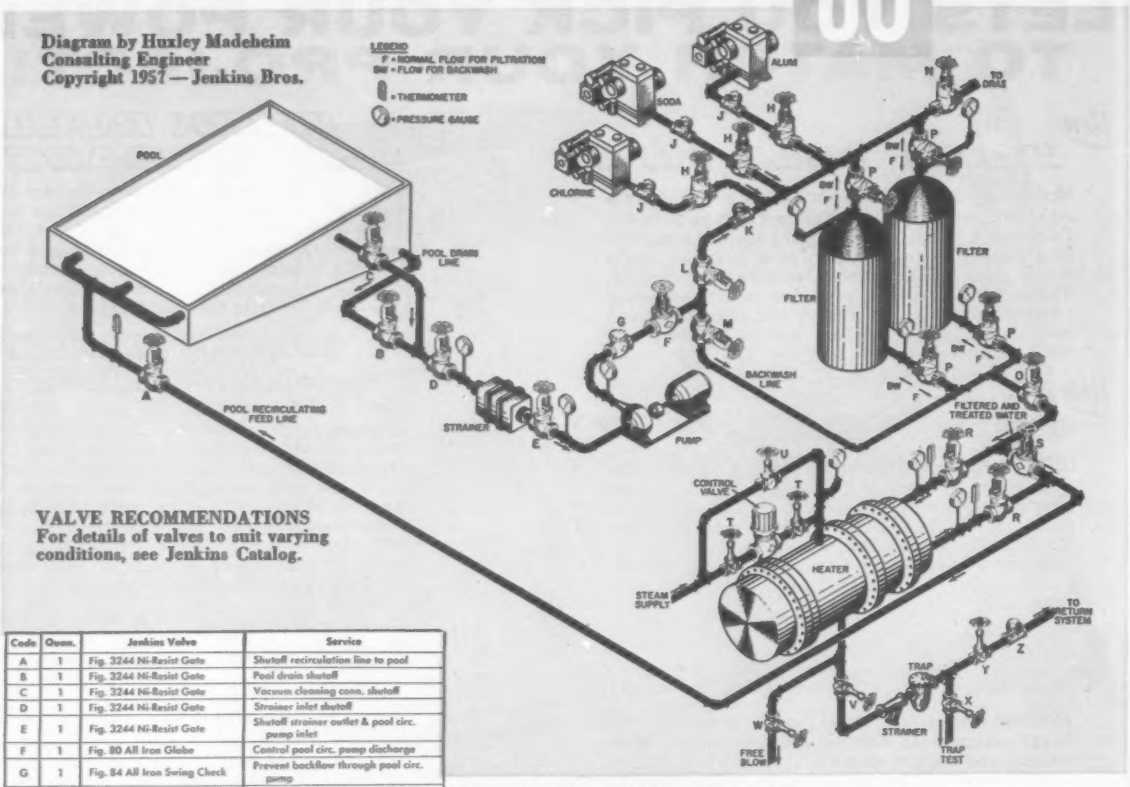
Work Bull Fork Lift with Block Tines and Side Shift adjustment.

Work Bull 1001 easily converts into pick-up sweeper.

Auburn Trencher turns Work Bull 202 into efficient trenching machine.

JENKINS PRACTICAL PIPING LAYOUTS

80



VALVE RECOMMENDATIONS
For details of valves to suit varying conditions, see Jenkins Catalog.

Code	Quan.	Jenkins Valve	Service
A	1	Fig. 3244 Ni-Resist Gate	Shutoff recirculation line to pool
B	1	Fig. 3244 Ni-Resist Gate	Pool drain shutoff
C	1	Fig. 3244 Ni-Resist Gate	Vacuum cleaning conn. shutoff
D	1	Fig. 3244 Ni-Resist Gate	Strainer inlet shutoff
E	1	Fig. 3244 Ni-Resist Gate	Shutoff strainer outlet & pool circ. pump inlet
F	1	Fig. 80 All Iron Globe	Control pool circ. pump discharge
G	1	Fig. 84 All Iron Swing Check	Prevent backflow through pool circ. pump
H	3	Fig. 1312 or 1313 S. S. Globe	Control chemical treatment feeders
J	3	Fig. 1328 S. S. Swing Check	Prevent backflow to chem. treatment feeders
K	1	Fig. 1328 S. S. Swing Check	Prevent backflow of chem. treatment to pump & BW line
L*	1	Fig. 3244 Ni-Resist Gate	Shutoff pool flow to filters — Normal filtration
M*	1	Fig. 3244 Ni-Resist Gate	Shutoff pool flow to filters — Backwash cycle
N*	1	Fig. 1312 or 1313 S. S. Globe	Control flow to drain
O*	1	Fig. 3244 Ni-Resist Gate	Shutoff recirc. flow to heater & pool
P	4	Fig. 1302 S. S. Gate	Shutoff filters
R	2	Fig. 3244 Ni-Resist Gate	Shutoff pool water heater
S	1	Fig. 80 All Iron Globe	Control bypass flow about pool water heater
T	2	Fig. 47-U Bronze Gate	Shutoff steam supply control valve to pool water heater
U	1	Fig. 106-A Bronze Globe	Control bypass flow st. supply pool water heater
V	1	Fig. 47-U Bronze Gate	Shutoff steam trap
W	1	Fig. 546-P S. S. and Bronze Globe	Control free flow
X	1	Fig. 546-P S. S. and Bronze Globe	Control steam trap test
Y	1	Fig. 47-U Bronze Gate	Shutoff return system from trap
Z	1	Fig. 92-A Bronze Swing Check	Prevent backflow from return system

	*Normal Cycle Filtration	*Backwash Cycle Filtration
L	OPEN	CLOSED
M	CLOSED	OPEN
N	CLOSED	OPEN
O	OPEN	CLOSED

JENKINS
LOOK FOR THE JENKINS DIAMOND ®
VALVES
JENKINS SINCE 1864 Jenkins Bros.
Sold Through Leading Distributors Everywhere

How to plan piping connections

FOR A SWIMMING POOL WATER CIRCUIT

In this swimming pool water circuit, water is drawn off by a pump having a strainer to remove foreign matter. Water is treated with various chemicals to render it slightly alkaline; to kill bacteria and to inhibit growth of algae and coagulated suspended solids. Water is then filtered, warmed and returned to pool through inlets. No make-up water connection is shown because most codes require an independent supply.

In normal operation of the system, valves L and O are open while M and N are closed, which permits water passage through filters and prevents flow to drain. Closing valve R and opening valve S will bypass heater when desired. Steam to heater is controlled by thermostatic valve.

Filter cleaning by "back washing" is done by closing valves L and O, and opening M and N. Water is forced through filters in reverse direction, and discharged to drain. Pool may be emptied by closing valves M and P, and opening L and N.

O. S. & Y. valves are recommended to prevent fluid action on spindle threads. All-Iron and Ni-Resist valves are specified for water circuit, and stainless steel valves where chemicals are encountered. Steam system valves are all-bronze or bronze with stainless steel trim.

Jenkins Fig. 240, and All-Iron, U-Bolt Gate, is used for shut-off control of flow to filters and heater. The solid iron wedge assures drop-tight closure, and the valve can be repacked under full pressure. Jenkins Fig. 1312 or Fig. 1313, Stainless Steel Globe Valves resist corrosion and are recommended for control of chemical and drain flow. The twin bolted bonnet and body design facilitates dismantling for cleaning and regrinding, and is especially suitable where chemicals might destroy conventional body-bonnet threading.

To assure efficiency when planning any major piping installation, consult accredited piping engineers and contractors. For prompt, capable help when you want Jenkins Valves and other supplies, call your local Jenkins Distributor. Jenkins Bros., 100 Park Ave., New York 17.

ENGINEERING NEWS-RECORD

Vol. 160, No. 14 April 3, 1958

Number of copies printed this issue, 82,552

CONTENTS

NATIONAL AFFAIRS

Gore Bill Called Threat to State Road Control.. 21
SAC Builds "Gunsight"..... 22
TV Solves Elevator Problem..... 22
Surveyors, Mappers Hail Electronic Aids..... 23
Mile-Long Bridge Gets First Girder..... 23
Road Standardization Amplified..... 24
All-Electric Housing Project..... 25
Steel Erector Comes and Goes..... 26
Pumped Storage—Answer to Power Demands. 26
Airport Modernization Enters Final Phase..... 27
Waste Troubles at New Plant..... 30
Precast Concrete Grille Shields Building Walls 30
New Church Building Looks Like a Fish..... 33
News Briefs 34

FEATURES

Machine Tool Warehouse Was a Mine..... 37
"Operator" on a Perch Collapses Tunnel Forms 43
Spraying Speeds Ceiling Plastering..... 47

FIELD AND OFFICE

Aeration Permits Water Work at —30F..... 52

INTERNATIONAL

France Builds Biggest Sphere for A-Power..... 54
German Tunnel Was an Air-Raid Shelter..... 54
Work Starts on Iraqi Railroad..... 56
Alcoa Plans Smelter, Hydro in Suriname..... 56
Japan Structures Finished After Decades..... 58
Loan to Aid Japanese Steel Expansion..... 58

NEW PRODUCTS

Changing Oversized Tires Made Easy..... 61
New Pipe Cutter Needs No Vise, No Turning. 61
Radiant Heating Used in Curtain Wall Panels.. 61
Electro-Mechanical Drive for Crusher..... 61
Tractor-Ripper Designed for Pipeline Work.... 62
Hydraulic Ram Has a 22 Inch Travel..... 62

MEN AND JOBS

Church to Head Navy's Southeast Construction 74
Mason Named to FHA Standards Post..... 74

BUSINESS AND FINANCE

Local Construction to Stay on Schedule..... 109
Maryland Legislature Cuts Capital Outlays.... 110
Astor Plaza Project Put on Shelf..... 110
Detroit-Area Construction Firms Merge..... 110
Philadelphia to Buy First Public Housing Units.. 113
Right-of-Way Operation to Be Streamlined.... 113
April Start Planned for Toronto Development.. 113
New York Lawmakers Approve Bond Plan..... 113

LABOR

What a Pre-Job Conference Is..... 114
New Guides on Legality of Hiring Halls..... 116

Legal	6	Unit Prices	86
Reader Comment ..	12	Materials Prices ...	89
Calendar	10	Construction Reports	92
Washington Observer	19	Scoreboard	106
Books	81	Editorials	128

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

HOMEBUILDERS LOSE AGAIN—Homebuilders' discontent with current collective bargaining patterns continues to rumble in Chicago, where the carpenters union has refused again to negotiate a labor contract with the Home Builders Association of Chicago. Carpenters plan, instead, to negotiate with homebuilders individually. If the pattern of the past prevails, this means that wage rates for the Chicago homebuilding industry will be those established by the Builders Association of Chicago, whose members are largely in heavy construction. Carpenters are asking BAC for a 30 cent raise, which the homebuilders say is "incomprehensible." The Home Builders Association last year lost a National Labor Relations Board appeal for the right to negotiate on an association-wide basis and still claims its members "employ three times as many carpenters" as the BAC members who set the rates.

A "FIRST" FOR NEW YORK CITY—A modern industrial park—New York City's first such facility—will take shape in Brooklyn if the proposal gets the nod from the City Planning Commission. The project's sponsor, Milton Steinberg of Brooklyn, has asked the city to rezone the area and remap it into "superblocks" to accommodate the $30 million project. The park would be in a 39 acre section known as the "flatlands" and under the sponsor's proposal, would consist of 15 one-story buildings for light manufacturing and related two-story office structures. Architects are S. J. Kessler & Sons of New York City.

CABLE-ROOFED ARENA FOR DALLAS?—A 7,000 seat livestock pavilion modeled after the precedent-setting Coliseum built in Raleigh, N. C., several years ago is under consideration by city officials and other interested groups in Dallas, Tex. The roof of the Raleigh structure is supported by cables strung between two horseshoe-shaped arches leaning in opposite directions. Dallas voters approved a $2 million bond issue in 1945 for construction of an arena, but plans never materialized.

DESPITE PREVAILING MISCONCEPTIONS—This year the engineering colleges of New York State had room for 3,457 more students. Revealing this startling fact, the Association of Engineering Colleges of New York State (representing 16 colleges) states that 2,817 of the vacancies were in the New York metropolitan area alone.

END-TO-END DEPT.—If the cement to be bought for Glen Canyon Dam were loaded all at once into railroad cars, it would fill 10,000 cars, which would form a train about 75 miles long. American Cement Corp. was the apparent low bidder last week for supplying 3 million bbl of bulk cement to the damsite at a cost of $9.7 million. In all, there were seven bidders.

Where a misstep costs $500... Blaw-Knox Electroforged® Steel Grating provides safer non-slip footing

Stair falls cost industry over $60,000,000 a year.

An average accident amounts to a loss of $500 in claims.*

A good way to guard against these profit-eating accidents is to construct your stair treads, walkways and floors with Blaw-Knox Electroforged Steel Grating. Non-slip twisted crossbars and a wide variety of bearing bars are available to meet every kind of working condition—safely solving the most hazardous skid situations.

Rigid, one-piece construction makes installation easy. Once on the job, Blaw-Knox grating practically takes care of itself. There is nothing to wear, nothing to patch, no dirt collecting corners to clean. It goes anywhere, fitting neatly around pipes, beams and machinery, admitting plenty of light and air to the area.

Made to your specifications, Blaw-Knox grating provides new highs in safety, easy up-keep and flexible application. For new ideas about grating—including space saving platforms and shelving, write for Bulletin 2486.

*Based on a study analyzing 803 compensable work injury claims closed in Illinois involving stairs and steps.

BLAW-KNOX

BLAW-KNOX COMPANY

Equipment Division
Dept. A, Pittsburgh 38, Pennsylvania

WASHINGTON OBSERVER

- **More dollars for sewage plant construction**
- **Asphalt roofing makers cry "monopoly"**
- **Democrats making headway on atomic set-up**

● **More federal money for municipal sewage plants is being pushed** as an anti-recession measure. The American Municipal Association, assisted by Congressional Democrats, is urging that the present $50 million-a-year grant program be doubled now. Rep. John Blatnik, author of the grant program two years ago, will begin consideration of a new federal pollution control program after the Easter recess.

Most probable legislation would: Double the annual limit of $50 million in grants; raise from $250,000 to $500,000 the limit on federal grants for each project.

Supporters estimate the program would stimulate $600 million worth of sewage treatment contracting a year over a three-year period. Last year some $351 million in contracts were awarded by municipalities.

The Administration opposes the increased program. President Eisenhower wants the states to take back full responsibility for financing sewage plant construction. The Administration will carry on its fight at the Governors Conference this May, but Congressmen Blatnik, the Municipal Association, and other local agencies expect to be able to win some new concessions —certainly if the recession continues for long.

—

● **Small asphalt roofing producers are crying "monopoly"** against the major suppliers of the building material. And Senate anti-monopoly committee chairman Estes Kefauver advises the Justice Department and Federal Trade Commission they may want to investigate the matter.

Witnesses before Senator Kefauver's committee complain that the large national producers cut prices in areas where there is local competition but maintain much higher prices where there isn't. Companies specifically named are Fry Roofing Co., and Certainteed Products. They say the charges of the small producers just aren't true; that there is plenty of competition, and the big companies are not trying to drive out small business but are meeting prices only in order not to "bleed to death."

—

● **Democrats are gaining in their drive for a federal atomic program.** The Joint Committee on Atomic Energy is yet to be satisfied with the Atomic Energy Commission's own power plant program, and after the Easter vacation will renew efforts to get something like last year's $400 million Gore bill. AEC is trying to compromise somewhat; it is expected to agree in the hearings that three new proposals might be authorized, but insist a broad scale program still should be left to private contractors and utilities.

But even some AEC officials now feel that private industry can't afford to do the job; and believe a federal program is almost inevitable.

US RUBBER AIR HOSE

Would you use this

for this?

Then why pay extra for heavyweight, muscle-bound air hose, when U. S. Rubber Air Hose is easier to handle, more flexible, and withstands higher working pressures... at lower end cost.

When you're on a tight budget and a tight schedule, there's no sense in throwing dollars away buying overweight, hard-to-handle air hose. Such hose—with excessive, unnecessary plies—is out of date, will slow you down, and leave you out of pocket.

Now, thanks to "U. S." engineering, you get the optimum balance in air hose—easier to handle *and* at the same time tougher and less expensive. What's more, U. S. Air Hose handles higher working pressures than the conventional air hose you might be using.

Every hose in the complete "U. S." line is designed to give maximum service, even under unreasonable demands. Take advantage of the skill and long experience of "U. S." Hose technicians, plus "U. S." research and production facilities. Get U. S. Air Hose at your local authorized "U. S." Hose Distributor, or write us at Rockefeller Center, New York 20, New York. In Canada: Dominion Rubber Co., Ltd.

US RUBBER

Mechanical Goods Division

United States Rubber

See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N. Y.

Federal road legislation is hot:

- **$400 million in emergency road money OK'd by Senate**
- **50-50 matching fund provisions would go to 70-30**
- **States could borrow two-thirds of their 30% share**
- **Apportionments for 1961 money left hanging in air**

Senate Road Bill Called Threat to States

There's dynamite as well as billions of additional construction money in the highway bill that Congress scheduled for final passage and transmittal to the White House this week.

Men like Chairman George H. Fallon (Md.) of the House Roads Committee and Francis Case (S. D.) of the Senate committee see an unnecessary hazard in the language apportioning $400 million of emergency money to the states for immediate use on the primary and secondary federal-aid systems, with their urban extensions. The agreed-upon bill allots these quick-spending funds on a 70-30 matching basis that for the first time upsets the traditional 50-50 matching formula.

Never before in the 52-year history of federal-aid highway legislation has Congress made a blanket change in 50-50 matching for the so-called ABC systems. The long-established matching ratio has remained too sacred to touch. Even when Congress was working on greater federal participation deemed appropriate in inaugurating construction of the national system of interstate and defense highways—culminating in the 90-10 ratio adopted for this 41,000 mile trunkline net in the 1956 Highway Act—no one proposed that federal payments for ABC construction be increased.

Highway people generally—officials, engineers, contractors and the motoring public—oppose any change in 50% federal aid for ABC roads. Almost without exception, they staunchly support 50-50 matching for ABC projects and condemn any upping of the federal contribution—except possibly in temporary circumstances such as the present economic recession.

• **Divided opinion** — Not everybody among the highway groups, however, sees a dangerous precedent in the emergency money provisions for ABC roads, as written into the modified Gore bill that the Senate approved last week. But the Administration, the Bureau of Public Roads and the American Automobile Association opposes 70-30 largely for that reason.

Views of the American Road Builders Association are representative of the more moderate position.

In earlier testimony before the Senate roads subcommittee, ARBA officials had advocated quick-action extra money for ABC construction on the time-honored dollar-for-dollar basis, with federal loans available to the states (against future apportionments) to pay the full 50% of state matching. Now, however, ARBA leaders see nothing alarming in the temporary provisions of the Gore bill.

They point out that the 70-30 matching money in the bill—which also permits state borrowing of two-thirds of their 30%, effecting what amounts to a 90-10 emergency arrangement for ABC projects—is offset in the same measure by regular 50-50 authorizations for fiscal 1960 and 1961 of $900 million for each year. This re-enunciation of established principles in the Gore measure, ARBA thinks, discounts the threat to long-accepted policy on ABC aid.

• **Called threat to state control**—Like others in the highway field, however, ARBA leaders look on any permanent upping of the federal ABC contribution as a distinct threat to state control of construction. Higher federal payments, they declare, would lead inevitably to closer federal control of ABC operations.

But AAA—as well as Congressman Fallon, his committee members and many representatives in the House—have serious objections to any tampering with dollar-for-dollar matching on ABC roads, even on an emergency basis. They regard the Senate provisions not only as a hazard for the future, but also as unnecessary and—what is worse—as a deterrent to the states in putting their regular 50-50 ABC money into projects as fast as they otherwise would.

Congressman Fallon, his committee and many House members are unhappy about the squeeze play that denied him an opportunity to introduce an alternate bill which he has had ready for some time. This bill would have set up $500 million of immediately available extra money for ABC construction by the states. And it would have allowed the states to borrow all of their 50% share on credit against future federal-aid apportionments.

These legislators dislike many features of the Senate bill, which the House undoubtedly would have amended and improved if it had been given a chance to act. But a shrewd maneuver by the Senate leadership tied their hands and blocked any chance for House consideration of the Gore bill.

Considerably more money than the Gore bill provides for the interstate system also would have been voted by the House if it had been allowed to act on the aborted Fallon measure. And the interstate apportionments would be firm for both 1960 and 1961. The Senate bill rushed through this week leaves 1961 interstate money hanging uncertainly on the Congressional tree. Interstate funds for 1961 are merely authorized by the legislation, and Congress will have to act again next year to make the apportionments effective.

• **No precedent**—There's nothing in the history of federal-aid legislation for the ABC systems to indicate that 70-30

. . . New road bill

matching—or anything like it—will in the future become a permanent fixture for these roads. It's true that there has been talk for 10 years or longer of increasing the federal share in ABC construction. But men close to the legislative scene cannot recall that this talk has ever crystallized in a serious proposal by any single Congressman.

Three times in the past Congress has enacted laws that gave special credit assistance to the states in meeting their 50% matching requirements or extended additional federal aid above 50% to states burdened by a high proportion of tax-free federal property. But every time, the program reverted to the ordinary 50-50 basis or rolled along at that ratio for the majority of states without disturbance.

The first of these special provisions came in a 1930 Emergency Construction Appropriations Act—not in a regular federal-aid highway bill. Congress voted $80 million of extra highway construction money and allowed the states to borrow any or all of their 50%. Two years later, Congress repeated in another appropriations act with $120 million. With the depression deepening, the debt was forgiven in 1934 and the states were relieved of reimbursement from later apportionments.

Finally, in the 1944 Federal Highway Act, Congress provided that any state containing public lands in excess of 5% of the total area of the state should have its federal aid increase by the percentage that public lands bear to the total area of the state. Since that time, federal aid to some far western states has gone up greatly, to top levels of 80% or more to a few states in ABC apportionments. Non-public land states agreed to the new ratio and have quietly accepted 50-50 matching for their own ABC roads ever since.

Expressway Group Switches Consulting Engineer Firms

A long-standing controversy between engineers, Palmer and Baker Inc., and the Greater New Orleans Expressway Commission has ended with the resignation of the consulting engineers on the $46 million Lake Pontchartrain Causeway.

The commission accepted the resignation last week and appointed the firm of Parsons, Brinckerhoff, Hall and Macdonald of New York as consultants.

It was learned only last week that the commission had dismissed Palmer and Baker on January 30. The engineering firm, which received more than $4 million in fees during the causeway's planning and construction, refused to recognize the commission's action and submitted its resignation instead after weeks of controversy.

Wayne Palmer, president of the engineering firm, said the commission sought to oust Palmer and Baker because it refused to approve a legal fee of $17,500 to the law firm headed by Frank B. Ellis of New Orleans, which received $460,000 during the construction of the causeway.

Lawyer Ellis, on the other hand, said the reason for the dismissal was the absenteeism of Wayne Palmer from Jefferson Parish (county) where the commission has its offices. The Ellis firm, which is retained by the commission for $10,000 annually, claimed that the $17,500 fee which Palmer and Baker refused to approve was for extra legal services.

Parsons, Brinckerhoff, Hall and Macdonald will be paid an annual retainer of $15,000 a year, $5,000 more than Palmer and Baker was receiving.

The Lake Pontchartrain Causeway is the world's longest bridge, stretching 24 miles across the lake between Jefferson and St. Tammy Parishes. It was completed in the summer of 1956.

SAC Builds 'Gunsight'

Semibasement structure to house missile equipment

The Stragetic Air Command will build a "gunsight" that can aim and fire from a central point the intercontinental ballistics missiles that are located at SAC's various missile bases.

To be located at SAC Headquarters at Offutt Air Force Base near Omaha, the new structure will house equipment and specialists to work out the trajectories that will send missiles from SAC bases roaring true to their preassigned targets in event of crisis.

The new missile headquarters, a semibasement 68 x 124 ft, will be housed in a wing to be built onto SAC's $10 million control center, which was completed last year. It is expected to cost around $800,000. The Omaha office of the Corps of Engineers has invited bids, to be opened April 22, on the first phase of construction.

Computers and other electronic aids, in large volume and massive in aggregate weight, will necessitate substantial protective construction. The floors, for example, are designed for a 250 psf load as compared with a 65 psf load for the rest of the center. The semibasement will be close by and physically connected with SAC's underground control center.

The wing will increase the control center's area of 475,000 sq ft by an additional 60,000 sq ft, and will bring construction at Offutt this year to the $22 million mark. At present $10 million in construction work is under way, the bulk of it made necessary by the assignment of a tanker squadron to the base. Another $10 million will go for Capehart housing at the base.

Work will begin soon on the design of a three-story structure to be erected atop the basement to accommodate the air combat intelligence center. The job is expected to cost about $3 million.

Plans for the new addition are under the command of Brig. Gen. James Knapp, Director of Installation Engineering for SAC. Leo A. Daly Co., Omaha, is the architect-engineer.

TV Cures Elevator Tie-ups

A problem that plagued the operators of the Dexter Horton Building, Seattle, Wash., has been solved with the installation of a closed-circuit TV system.

Due to the topography of the ground, this office building like many other large ones in Seattle has main entrances on two street levels. This makes elevator control difficult, since the starter on the lower level has no way of determining the amount of traffic on the upper level, and results in constant jams and unusual delays.

A TV camera was installed at the upper building level; a coaxial cable was dropped three floors to the lower level and the lobby picture was piped to a television receiver installed on a bracket on the elevator wall.

The TV system was manufactured by Dage Television Division, Thompson Products, Inc., Michigan City, Ind., and installed by the Mutual Electronic Supply Co. of Seattle.

Surveyors, Mappers Hail Electronic Aids

Exhibits stress modern instruments as surveying and photogrammetry groups marvel at fast new methods

Surveying and mapmaking, on the ground and from the air, are reaping benefits of fast-moving method developments that constantly improve speed and accuracy. Surveyors and cartographers are soaring forward on the wings of an electronic revolution, over the entire range of activity from international aerial inspection to production and utilization of maps and color photographs.

Speakers and technical exhibits pointed up this rapid progress in Washington last week during five days of consecutive annual meetings sponsored by the American Congress of Surveying and Mapping, and the American Society of Photogrammetry.

In a paper that attracted worldwide interest, George D. Whitmore of the U. S. Geological Survey highlighted the feasibility and limitations of aerial inspection. He based his comments on the mutual inspection proposal put forward for international consideration by President Eisenhower at the Geneva summit conference in 1955.

One high-flying jet aircraft in 170 flying days could cover the length and breadth of the 8.5 million square miles of Soviet territory, Mr. Whitmore said, and bring back vertical photographs with a picture scale of 1:94,000. They would reveal most military and industrial activities in the huge area.

Interpreted by experts, the aerial pictures would show enough, however, to serve as a strong deterrent to mammoth preparations for aggressive war. But supplemental ground inspection and mutual exchange of blueprints, as proposed by the President, would be necessary to make the deterrent 100% effective, Mr. Whitmore declared. Above all, he said, "We must not allow the public or official mind to be deluded by overblown ideas of photo-reconnaissance miracles."

• **Instruments for speed**—Electronics is a key factor in nearly all the high-speed development discussed at the meetings—from Shoran, geodimeter and tellurometer for ground control to electronic temperature control for solutions used in developing color film.

A comprehensive example was given in Mr. S. G. Gamble's description of mapping techniques used by Canada's topographical survey in mapping the inaccessible and difficult Ungava Peninsula east of Hudson Bay. Electronics applications on this project include: (1) Shoran geodetic control for primary positions, (2) radar altimeter values (obtained by airborne profile recorders) for vertical control and determination of horizontal scale, and (3) tellurometer traverses for secondary survey control and tellurometer distances for establishing scale on selected flights.

A tellurometer panel highlighted the growing use of this equipment. Tests of a recently purchased unit by K. B. Wood & Associates, Inc., engineering firm of Portland, Ore., indicated measurement accuracy within the claims of the manufacturer: 2½ in. at 10 miles, 4 in. at 20 miles and 8 in. at 40 miles. A Washington representative of Tellurometer, Inc., warned of a decrease in accuracy, however, for short measurements.

Morris M. Thompson of USGC told how the familiar technique of aerial mapping—but with no airplanes involved—was used to show accurately the configuration of sand dunes in the bed of an hydraulic test flume. A modified aerial mapping camera and its mounting were supported at a nominal photographic height of 40 in. above the flume on a simple frame that permitted sliding of the assembly from one to another of the exposure stations over the flume.

Another panel on the geodimeter discussed the new "polar survey" method. The geodimeter is set up at a central point of a polygon, and the angle and distance to each of the vertices, or reflector stations (which need not be occupied) are accurately fixed—with the aid of a conventional theodolite for observing the angles. A simple check can be made by moving the central geodimeter station and distance greater than 10 ft and repeating the observations.

Also reported was a recent survey in northern Sweden by the Swedish State Power Board. Over 1,000 miles of line were measured in closed traverses with unadjusted connection ratios that ranged from 1 to 50,000 up to 1 to 385,000. These surveys made use of new geodimeters of reduced size and weight.

Included among the exhibits at the meetings was a historical display of 60 surveying and mapping instruments dating back to 50 B. C. or earlier. The display provided a sharp contrast to modern electronic methods.

New presidents took office in both organizations at the close of the respective meetings: Willfred B. Williams of Grand Rapids, Mich. for ACSM and John I. Davidson of Washington, D. C., for ASP.

Mile-Long Bridge Gets Its First Steel Girder

The Illinois Toll Highway's mile-long Tri-State Tollway bridge gets its first structural steel girder. The bridge, which will cross the Chicago Sanitary and Ship Canal, the Illinois-Michigan Canal, the Des Plaines River and the Sante Fe and GM&O railroads, will be the longest of 265 bridges on the 187 mile long tollway.

Road Standardization Amplified

Joseph Barnett explains policies now set or under consideration by Bureau of Public Roads and AASHO

Geometric and construction standards for the federally aided interstate highways were drafted at the time the Highway Act of 1956 was passed. In the two years that have since passed, much has been accomplished towards getting general acceptance of the fine points of standardization. At the same time, however, many problems have arisen which are yet to be answered.

It is not surprising, and in fact it was expected, that questions would arise in regard to standardization of the interstate highways. The standards set forth in compliance with the Highway Act were, of necessity, very brief, for they are limited to basic requirements. Their purpose was to insure adequacy for future traffic needs and to encourage uniformity between the states (ENR July 26, 1956, p. 21).

Such uniformity, however, does not require the same dimensions for the same type road in all states, particularly since the standards are minimum in character and dimensions above minimum are highly desirable. Conditions in one state would enable higher values to be attained with very little extra cost. In another state where above-minimum values will require expenditure out of keeping with the benefits obtained, minimum or near-minimum values are acceptable.

In a speech presented last week to the New York State Association of Highway Engineers, Joseph Barnett, deputy assistant commissioner for engineering, Bureau of Public Roads, explained the present status of policies affecting interstate design. Here, in short, is what he said:

• **Controlled access**—Although control of access is generally required on the interstate system the standards provide that under extraordinary conditions and where a grade separation would not be in the public interest, crossings or entrances at grade are permitted through agreement between the state highway department and the Secretary of Commerce.

The conditions in actual practice under which this exception has been approved have varied, but in one case there is a primitive road leading to a radar station which might be examined once a week. This road is permitted to enter the highway, and a locked gate is provided.

Approval also was given in the case of a road in the state of Washington found to have entrance volumes ranging from six to ten vehicles per week. However, these situations generally are found only in the sparsely settled West.

• **Frontage roads**—The question of frontage roads has been a vexing problem in the design of interstate highways, particularly with regard to uniform application between the states.

Where an existing highway is converted to a freeway there usually is no problem. Rarely is it economical to purchase existing access rights and it is best to convert the existing roadway to one frontage road and restore access on the other edge by constructing a second frontage road.

Freeways on new locations pose the same problem. Some states operate under legislation or under judicial decision by which highways on new locations can be developed without frontage roads and no damages need be paid for controlling access.

However, other states feel that even when on new locations parallel frontage roads are required. As a result, some states are thinking in terms of little or no frontage roads, and others in almost unlimited mileage of frontage roads.

The AASHO and the Bureau of Public Roads in a published policy guide on the subject have taken the position that where a highway is on new location, frontage roads as such are not to be provided except to restore local circulation by connecting a cut-off local road or street with another road or street which crosses over or under the interstate highway.

• **Safety rest areas**—A brochure published by AASHO to cover safety rest areas shortly will be available for guide purposes. The policy portion of it, on which the states will letter ballot, is deliberately limited in scope.

It calls for rest areas to be provided on interstate highways as a safety measure, separated from the through traffic roadways, with high-type entrances and exits, including acceleration and deceleration lanes, parking areas, benches and tables.

They may be designed for short-time picnic use in addition to parking of vehicles for short rest periods, but they are not to be planned for use as local parks, leisurely picnics, active recreation, water-front activities or over-night camps.

The safety area is to be entirely within the control of access lines so that it serves its purpose of providing spaces to rest for travelers on the interstate highway only and is to be limited in size so that not more than about three acres may be developed. National, state and local parks are not considered to be part of interstate highway development.

• **Lighting**—Many miles of the interstate system doubtless will have fixed source lighting. However, there is no sound basis for justifying fixed source lighting. The investment is large. Minimum values are $40,000 per mile for first cost and $4,000 per mile per year for maintenance and operation, but these figures are challenged as too low by many who claim they should be doubled or tripled. Against this is the fact that a properly designed highway on the interstate system has no pedestrians, no crossings at grade, a wide planted median so that headlight glare is minimized and adequate shoulders so that few vehicles will ever stop on a through-traffic lane.

One tangible benefit of lighting may be reduction in accidents, but until data on accident experience are available we are dealing with conjecture.

• **Fencing**—The AASHO Committee on Planning and Design Policies is preparing a preliminary discussion on fencing the interstate right-of-way. The present thinking is about as follows:

There appears to be no justification for constructing a fence which has no other function than to show the limits of the right-of-way on the ground.

Some fencing however will be necessary. In urban areas strong fence may be needed where it is found that pedestrians, particularly children, cross the controlled access highway directly. In rural areas stock-proof fences will be needed to reduce the hazards created by domestic and range animals which may get on the right-of-way. A link-chain fence is expensive but in some places its use may prevent wild animals crossing the highway.

• **Signing**—A special committee of the AASHO has done some research on signs for interstate highways, and the association's policy on signing has been approved by the states. It is clearly the intent to restrict signs to those necessary for the safe and expeditious operation of traffic.

The present thinking of the Bureau of Public Roads is: Travel on interstate system highways is likely to be at relatively high speed. For safety, signs must have large letters and the message will have to be simple. Signs will be justified only for important messages such as warning and direction signs.

• **Service stations**—In the preparation of the AASHO frontage road guide the matter of services to motorists on the interstate highway had to be con-

sidered, because the Highway Act prohibits the development of service facilities on the rights-of-way of interstate highways. Therefore areas where such services might be available are shown in the guide illustrations for typical treatment of frontage roads.

They generally are along the crossroad or street which has interchange with the interstate highway or along frontage roads which are adjacent to the interstate roadways and which are accessible for interstate traffic through the normal design for interchange.

It is not believed that drivers, in leaving the interstate highway to obtain services, will subject the local and state highways to undue traffic loads, since state highway departments can design the interchanges and the crossroads at such locations so as to provide adequately for the traffic.

• **Police and maintenance facilities**—The AASHO Committee on Planning and Design Policies is in agreement that police and maintenance facilities also should be located on crossroads which have complete interchange with the interstate highway. Such a location would make the facility accessible from all directions and without the need for crossover or U-turns.

• **Telephones**—The AASHO Committee on Planning and Design Policies obtained a legal opinion from the general counsel of the Bureau of Public Roads to the effect that public pay station telephones would not be considered commercial establishments for serving motor vehicle users and they, therefore, could be installed on the interstate right-of-way. The committee now is preparing a preliminary discussion on a policy for such installations, which is to include all other means of emergency communications, such as radio telephones and the use of police.

• **Standards as such**—The interstate standards for minimum guide values and the policies on frontage roads and safety rest areas are already adopted by the AASHO. The other items are being considered by the committee. Thus, a gradually expanding set of guide values is and will be available and they will aid materially in assuring reasonable uniformity between states.

However, said Mr. Barnett, it would be a mistake to consider them as anything but guide values. For best results, each project must receive individual attention and analysis by competent highway engineers. Only thus can we be assured of our ultimate objective—over-all economic expenditure of public funds for highways of the greatest utility and safety and the most pleasing appearance.

HOUSING in this project with 1,535 units, now under construction for the Air Force at Little Rock, Ark., will be heated and cooled by heat pumps.

All-Electric Housing Project

The world's largest all-electric heat-pump housing project is underway at the Strategic Air Command Base near Little Rock.

The $22.6 million Capehart project will comprise 1,535 housing units on a 330 acre site in the southwest corner of the B-47 base. About 140 houses (280 units) are already constructed.

Each unit has a 2½ ton split-system heat pump, which was designed for the project. Heating and cooling coils and blower are located inside the houses, while the compressor and other working parts are outside. The inside part of the heat pump, together with the water heater, occupies part of a utility closet.

Refrigeration lines run from the compressor unit under the foundation to the part of the pump inside. Each housing unit has about 100 ft of 5 or 6 in. round galvanized-steel ducts for the high-velocity air-distribution system. The heated or cooled air empties into circular diffusers in the center of the ceiling in every room.

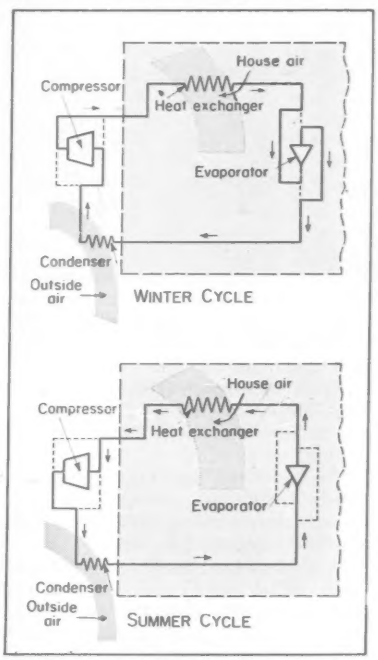
The pumps were designed to maintain a temperature difference of 25F in summer and 65F in winter. Each is expected to consume an average of approximately 5,800 kwh of electricity annually.

Among the advantages of the "remote unit" heat pumps are: less floor space required; easier application from mechanical and architectural viewpoints, and low noise level, since the compressor section is outside.

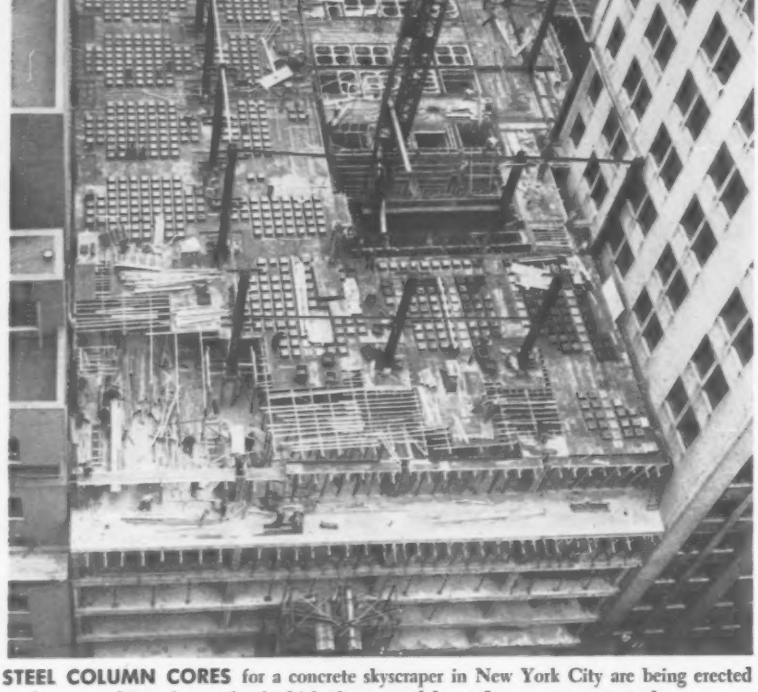
The houses will be one-story structures and will have all-electric kitchens. Average cost per unit is $13,500. The structures, privately financed and insured by FHA, are being built under Title 8 of the 1955 National Housing Act.

Floors of the homes are concrete slab on ground with 2 in. foamed-polystyrene perimeter insulation. Interior walls are plasterboard and outside walls are wood and brick veneer. Ceiling and wall insulation is glass fiber.

Miles Construction Co. of Los Angeles is the general contractor. Architect for the project was Wittenberg, Delony and Davidson of Little Rock. The heat pumps were manufactured by the Mathes Co., Fort Worth, Tex.



HEAT PUMP CYCLE—In winter, heat is extracted from outside air and discharged inside. In summer, procedure is reversed.



STEEL COLUMN CORES for a concrete skyscraper in New York City are being erected in three-story lifts, after each of which three metal-dome floors are constructed.

Steel Erector Comes and Goes

Scheduling of the construction trades for an air-conditioned 31 story office building now being erected in the insurance district in New York City is unusual. Because the framing is reinforced concrete—but structural steel sections are required for column cores—the steel erector, Karl Koch Erecting Co., Inc., sets a lift of columns, then leaves the site until the concrete work catches up.

The building was designed for reinforced concrete at a time when structural steel was in short supply. So structural steel requirements were kept to a minimum and the 1,200 tons of column cores required were imported from Belgium. The cores are built-up H-sections completely fabricated by welding.

Floors in the building, aggregating 680,000 sq ft, are of metal-dome reinforced concrete construction. The slab atop the domes is 3 in. thick.

With structural steel cores, the columns can be kept to much smaller sizes than if bars are used for reinforcing. But there is a field problem. Steel erection cannot proceed continuously for the full height of the building, as for steel-framed structures, until the concrete floors are put in to brace the columns (unless, of course, temporary bracing is used).

Koch erects the steel cores in three-story lifts. Then, the steel men leave the site for 10 to 20 days, while the concrete contractor puts in the next three floors. The derrick is jumped three floors at a time, through a narrow opening left in the floors for the purpose.

The building is L-shaped, fronting 188 ft on William St. and 173 ft on John St. and surrounds an existing 20 story office building on the corner. The old structure will be integrated into the new one. As a result, floor-to-ceiling heights for the first 20 stories of the new building will be 9 ft to line up the floors in the two structures.

The exterior of the corner building will be replaced to obtain a common facade for the combined structures. The first story will be faced with granite. Above, window frames and mullions will be polished aluminum, and spandrels, sand-blasted dark-gray aluminum.

Sylvan and Robert Bien were the architects, and Charles Mayer, the structural engineer. Irons & Reynolds-Snare, a joint venture, is the general contractor.

Pumped Storage—Answer to Increasing Power Demands

With the demand for electric power steadily increasing, and economical hydro power sites becoming harder to find, more attention is being given to developing pumped storage of water for producing hydro power.

This was the theme of four speakers at one of the technical sessions of the American Power Conference held in Chicago last week, March 26-28, and sponsored by the Illinois Institute of Technology.

"Pumped-storage," one speaker said, "promises major economies when there are seasonally intermittent supplies which form the major storage, or where draw-down of the reservoir to provide seasonal flood-control storage causes releases to be intermittent. Under some conditions the combination of steam generated power and hydraulic pumped-storage may become competitive with power produced entirely from steam generating plants, or from hydroelectric plants."

"One of the chief advantages of pumped-storage projects," said another of the speakers, "is that they generally require much smaller reservoirs than are needed for conventional hydroelectric developments of the high head, seasonal storage type. Based on average construction and operating costs of steam and hydro plants, an estimated justified investment in pumped-storage generating plants is on the order of $165 per kw of installed capacity."

General requirements for pumped-storage hydroelectric generating plants include at least 200 ft head of water; generating units should be quite large in order that the unit costs of installation and operation can be reduced to a minimum; the pool or pools created by pumped-storage should be adequate for the required service, but no larger, to minimize the cost of land and clearing; and a reliable supply of water should be available for filling the system initially.

It was agreed that pumped-storage hydroelectric capacity has very definite advantages in operation, and should be explored by any power system which does not already have a large percentage of peaking capacity such as exists in hydro plants.

Highway Fills Promoted As Irrigation Dams

The National Association of Soil Conservation Districts will push for a program of using large interstate highway fills as small dams. The association passed a resolution urging an immediate study by the U.S. Bureau of Public Roads and the Soil Conservation Service of the dual use of the fills.

A plan for using the superhighway

fills as dams was formulated for Davidson County, Tenn., about six months ago.

(Last week, ENR reported the failure of a highway fill that doubled as a dam in South Carolina—March 27, p. 24.)

The Davidson County proposal provides for national legislation permitting state highway departments and the Bureau of Public Roads to accept free grants of superhighway right-of-way from farmers. In return, the highway fills would be designed to contain a watertight core or a watertight blanket. Normal drainage culverts would be raised to provide spillways for the dams.

Westerners Hit U. S. Court Decision on Water Policy

Speakers at the recent Western Governors Conference held in Colorado Springs, Colo., expressed alarm over federal activities in the water resource field.

Attorney General Robert Y. Thornton of Oregon referred to the Supreme Court's decision in the Pelton Dam case as a "serious and dangerous threat to the future well-being of all western states and perhaps to every state in the union."

The court's ruling permitted the Portland General Electric Co. to build a hydroelectric power dam on the Deschutes River despite the state's objection that it would interfere with a salmon spawning area. The Federal Power Commission granted a license for construction of the dam even though the waterway is a non-navigable, intrastate river, said Mr. Thornton.

The Government's claim that it is in the right because the damsite is on reserve federal land, was upheld.

Hydro Site to Be Studied On Columbia Tributary

Klickitat County (Wash.) Public Utility District has applied to the Federal Power Commission for a preliminary permit to investigate hydroelectric possibilities of the White Salmon River, a tributary of the Columbia River in south central Washington.

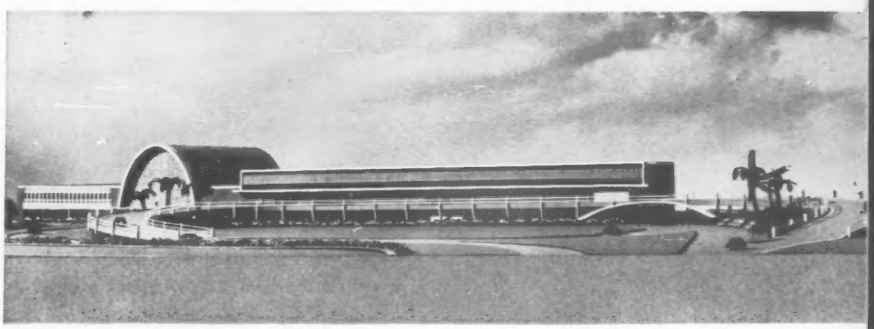
As proposed, two storage dams in the upper river basin would store a total of 83,000 acre-ft for a series of five downstream powerhouses and one powerhouse between the two reservoirs.

The six powerhouses would range in capacity from 13,000 to 48,000 kw and could develop 625 million kwh of firm energy annually in a minimum water year, according to preliminary studies.

The PUD proposes development in two stages with an estimated total cost of $48.5 million to be financed by sale of revenue bonds.

Obsolete Air Terminal . . .

. . . Gives Way to Tower and . . .



. . . New Three-Level Replacement

An $8.2 million modernization program at New Orleans Moisant International Airport has entered its final phase with steel erection for a $7 million terminal building well underway.

The three-level, air-conditioned terminal should be ready for use in Feb., 1959. It will contain 300,000 sq ft of floor space. A curved elevated roadway will provide access to the terminal.

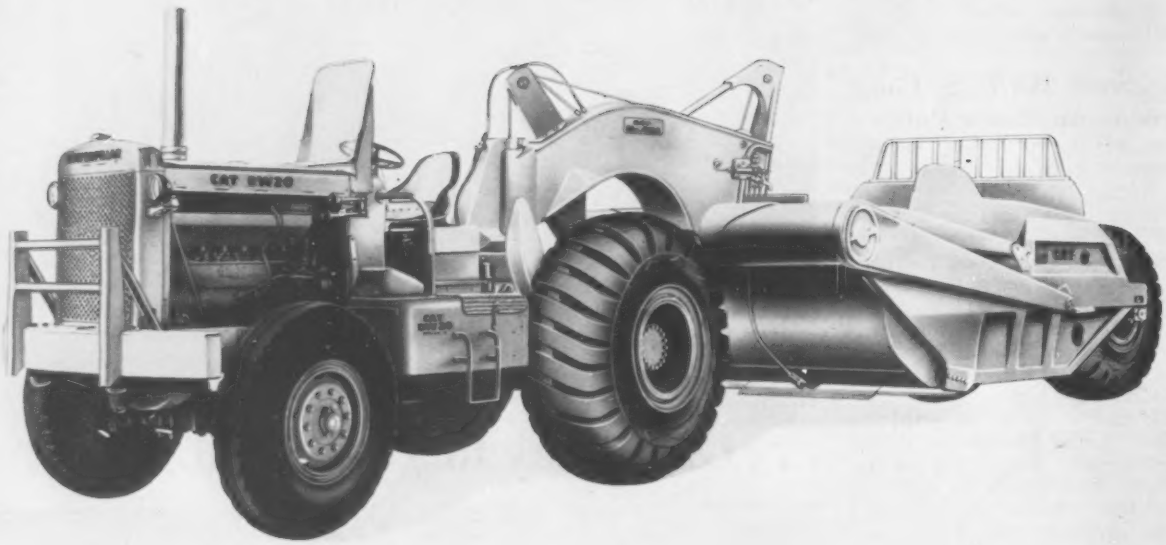
Initially, the building will consist of three wings, projecting east, west and north from the main entrance, which will be roofed by a barrel arch. A new control tower has already been built at the end of the north wing.

The old terminal, built in 1940, is now outmoded and too small to accomodate Moisant's increased business. The airport's north-south runway was recently extended from 5,000 to 6,000 ft and a new lighting system was installed. In addition, foundation has been laid for a new $90,000 fire house at the airport and the northeast-southwest taxiway has been re-topped and widened.

General contractor for the terminal project is the J. A. Jones Construction Co. Architects for the project are Goldstein, Parham and Labouisse; Herbert A. Benson; and George J. Riehl, all of New Orleans. Leigh Fisher Associates, of South Bend, Ind., is consultant.

HERE THEY ARE!

DW20 and DW21 WITH N



DW20
(SERIES F)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 35.8 MPH!

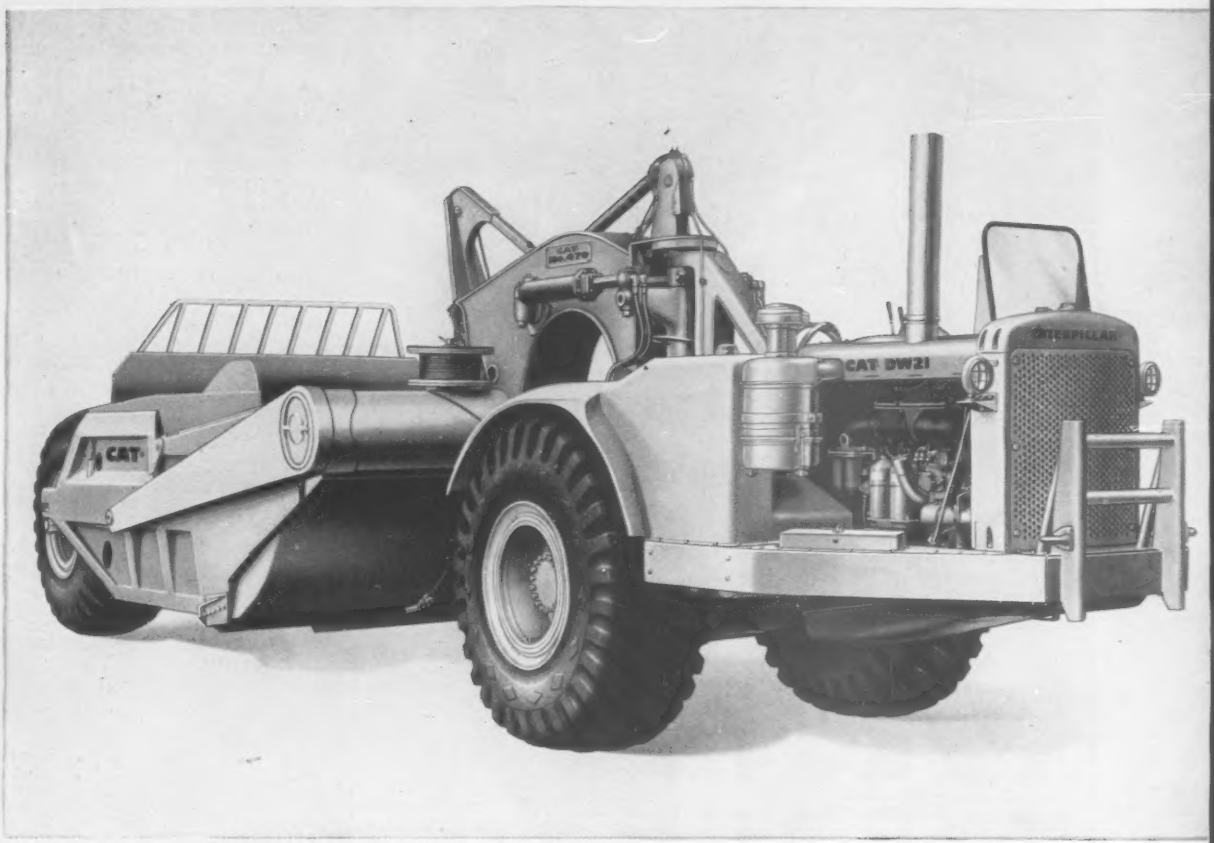
Powered with a brand-new SUPER-TURBO Engine, these big Caterpillar rigs are faster, more powerful than ever. Horsepower of both the DW20 and DW21 is increased to 320. At equal rimpulls, speeds are 10% greater, and torque rise is more than double compared to the previous models. Now you can move earth faster and easier—and still have the dependability for which Cat equipment is famous.

Behind the new performance of the new DW20 (Series F) and DW21 (Series D) is their new SUPER-TURBO Engine. This amazing power plant incorporates a new concept in diesel engine turbocharging. Its heart is a revolutionary air induction system, unique in earthmoving machines . . . and another Caterpillar first.

This system allows use of more of the Turbocharger's potential than was possible before. Results: twice as much torque rise, higher horsepower, better acceleration and gradeability.

But more important, these results translate into faster cycles, greater production and more profit—*for you.*

NEW INCREASED HORSEPOWER



DW21
(SERIES D)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 22.6 MPH!

Add to these DW20 and DW21 power advantages all the design features of Caterpillar LOWBOWL Scrapers. These matched units are built to use the greatest possible loading potential of the new power in the tractors.

Higher horsepower! New torque rise! Faster working speeds! Your production will hit new highs and your costs will drop when you turn these improved rigs loose on your job.

Call your Caterpillar Dealer right now and set up a demonstration on a job of your choice. The sooner you see the powerful new DW20 and DW21 in action, the sooner you'll start getting bigger returns from *your* wheel spread.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

SUPER-TURBO ENGINE
—First in the Industry
—First in Performance

Waste Troubles at New Plant

Georgia Pacific Paper Co. opened its new $22 million kraft paper, pulp and hardboard plant in Toledo, Ore., early last month, but shortly ran into some tough waste disposal problems due to malfunctioning of the waste system.

Waste facilities include an emergency holding lagoon, two 1,500 gpm vertical turbine pumps and a 16 in. dia pipeline 7¼ miles long to deliver 2.2 million gal a day of oxygen demanding wastes to a point 3,300 ft into the Pacific Ocean. The system was designed to keep Yaquina Bay and the Yaquina River, where the plant is located, free of pollution.

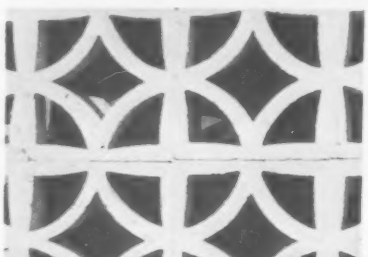
After pulp processing began, there were complaints from cottage owners along the coastal beach about brown foam that was carried to the beach, apparently from the effluent pipeline. Then the pipeline was put out of commission by a small slide and the pumps became clogged with pulp wastes, while the processing plant experienced some accidental spills. These mishaps combined to cause the emergency lagoon to fill in a hurry, which then resulted in serious weakening of its dikes.

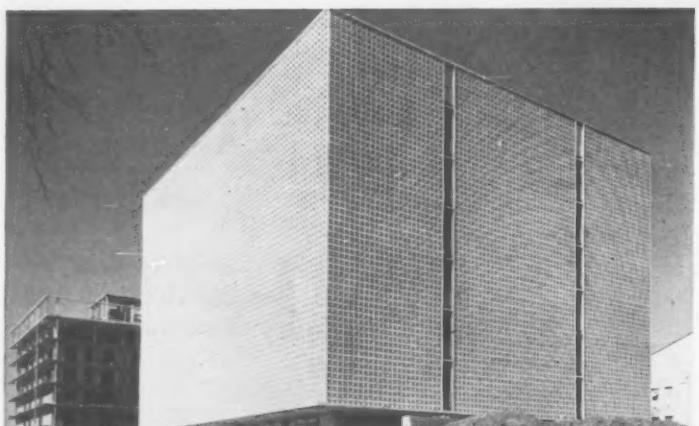
The Oregon State Sanitary Authority stepped into the picture by ordering the mill to strengthen the weakened pond wall but not allowing the lagoon to be emptied into the Yaquina River to facilitate the dike repair. The mill also is under state order to do something about the foaming problem at the effluent outfall.

The new Georgia Pacific Kraft mill (foreground in photo) forms an integrated operation with the firm's lumber and plywood mills at the site (background), which furnishes the paper mill with "waste" wood chips. The paper mill is built on reclaimed tidal swamp land, with structures supported on piles.

An extensive water supply system had to be built for the new plant, a tidal barrier 10 ft above mean sea level was constructed where the Yaquina River enters Yaquina Bay. Five miles upstream of the barrier on a tributary stream a 70 ft earthfill dam creates a 1 billion gal water reserve. And for additional protection against low stream flows, a 16 in. pipeline was run over a divide to an intake in an adjacent valley. In normal operation the mill will use over 6 million gpd, two-thirds for cooling water.

Sandwell & Co., Seattle, were consulting engineers on the pulp mill design, while Cornell, Howland, Hayes & Merryfield, Cornwallis, Ore., engineered the off-site water supply. W. J. Shelton, vice president of the kraft plant, supervised its construction.





CONCRETE SCREEN—of the type of open fence block appearing in closeup above—encloses the entire exterior of the building in the foreground, right. It conceals the walls, which are like those of the building in the background.

Precast Concrete Grille Shields Building Walls

Two 7-story men's dormitory buildings under construction on the University of South Carolina campus in Columbia are being built with double walls 4 ft apart. The inner walls are expanded-concrete masonry. The outer walls are open grilles made up of precast concrete units.

The structural frames of the buildings are reinforced concrete flat-slab type, with the slabs projecting 4 ft outside the column lines. The grillwork is supported at the edge of the slab, the inner walls at the column lines. The buildings are joined at second-floor level by a continuous slab under both.

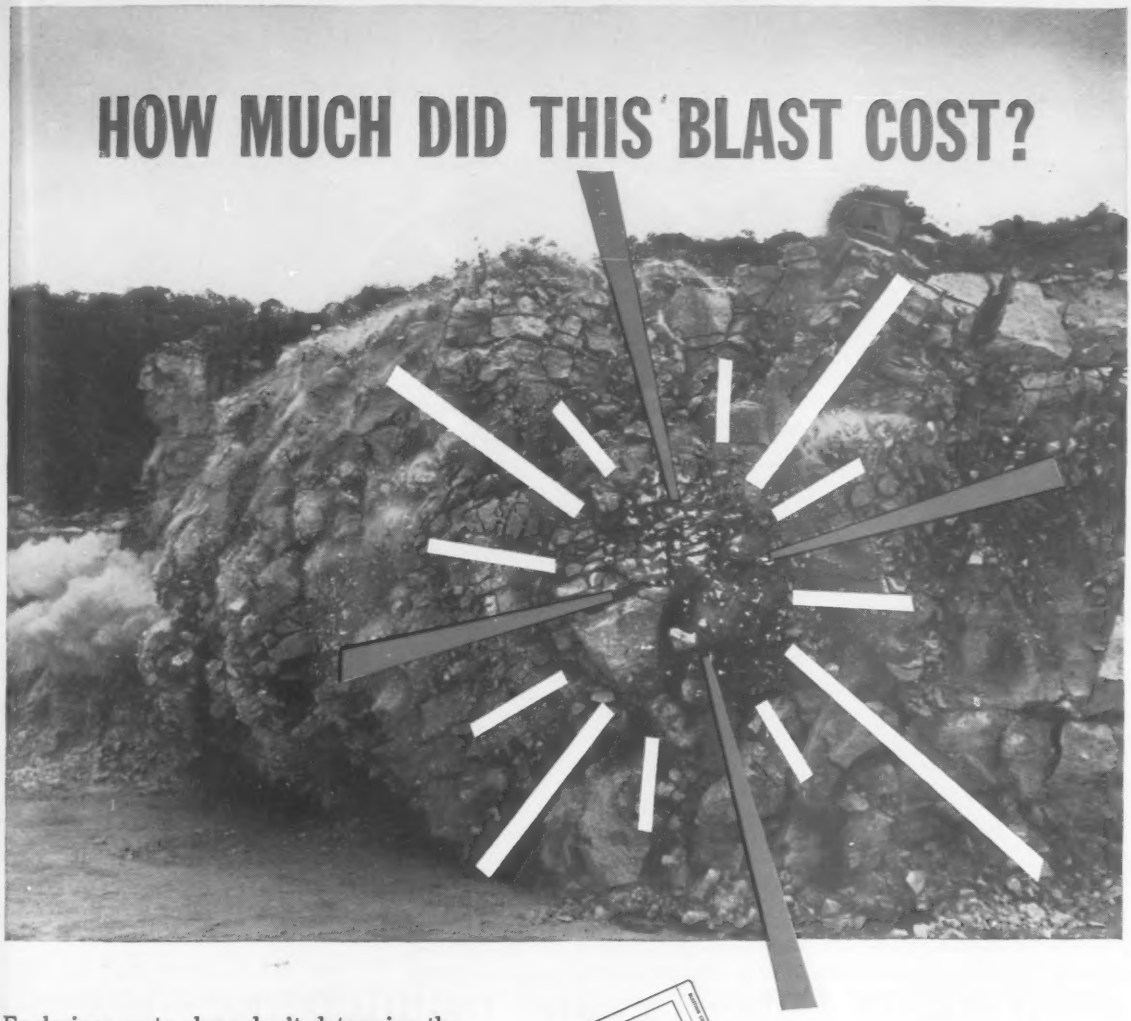
There are no conventional windows, but leading from each room to the 4 ft space between walls is a double sliding door partly glazed.

Construction cost of the buildings totals a little more than $1.1 million. Two additional groups like this one are planned.

Designers of the buildings are G. Thomas Harmon, architect, and Julian B. Shand, structural engineer, both of Columbia, S. C.

Hesley Construction Co. of Columbia is the builder.

HOW MUCH DID THIS BLAST COST?

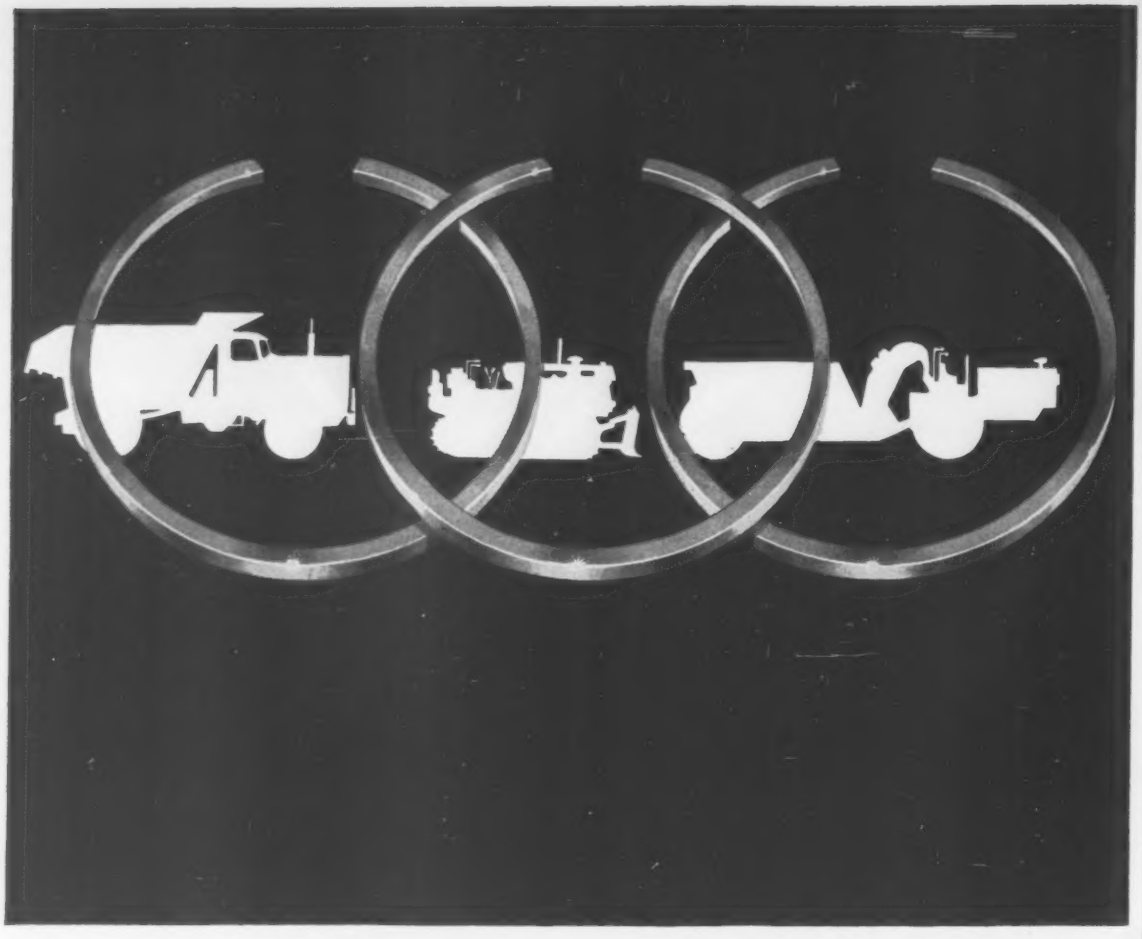


Explosives costs alone don't determine the value of a given blast. The explosives you use have a direct effect on the whole operation: drilling, digging, hauling and crushing.

You can find out, quickly and easily, the true, complete cost on any blast by using the new, simplified computing method developed by Atlas. It's called the Blasting Cost Chart, and it's yours without cost or obligation.

Use this new method to learn your real blasting costs. It will help you plug profit leaks and come out money ahead in your blasting. Your nearest Atlas representative will show you how the chart works, and you can keep the actual figures within your own organization.

EXPLOSIVES
DIVISION
ATLAS
POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities



keep engine deposits—and maintenance—low

Estor D-3 is a heavy-duty detergent oil formulated to meet the rigorous demands of late-model, supercharged diesel equipment requiring a "series 3" lubricant. Even under the most extreme operating conditions, it resists the formation of dangerous hard carbon deposits. As a result, rings are protected from cracking and other deposit-caused difficulties, and an effective seal is maintained between pistons and cylinder liners. This means *maximum power and fuel economy with minimum wear* – and longer periods between overhauls, lower operating costs.

The high-detergency of Estor D-3 acts full-time to reduce crankcase sludging and to keep all moving parts free from gum and other deposits that can become hard and troublesome. Also, Estor D-3 removes light gum deposits that may already have formed and protects bearings from corrosion.

Get the whole story from the nearest Esso office. Esso products and services are available through Esso Standard Oil Co. plants and offices in over 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, W. Virginia, the Carolinas, Tennessee, Arkansas, Louisiana, and the District of Columbia.

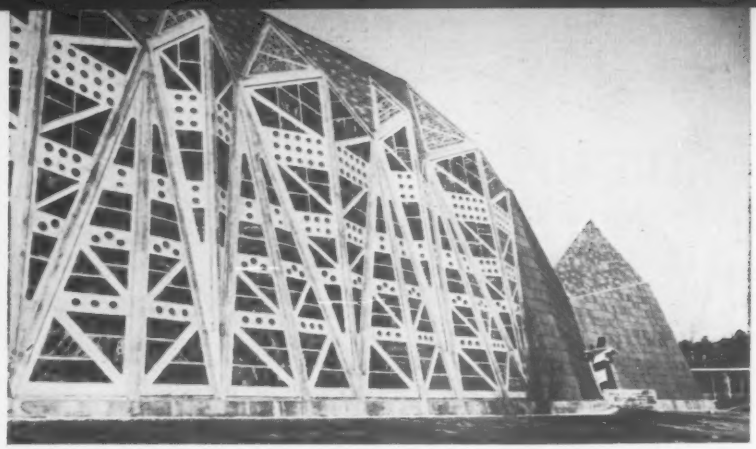
perfected by research

ESTOR® D-3

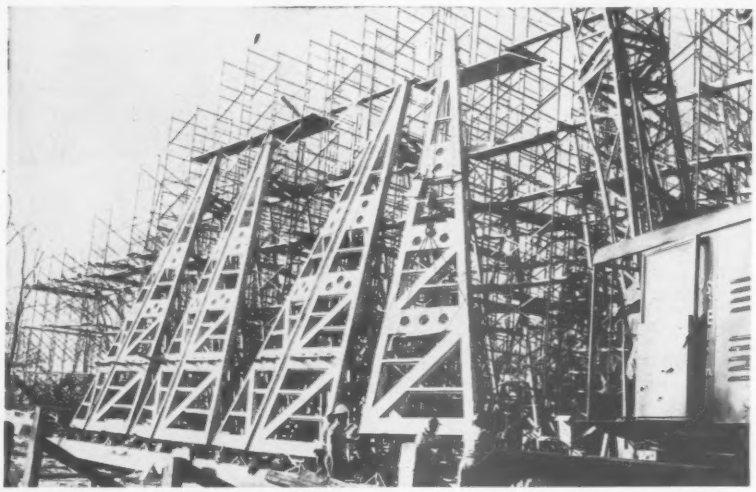
Esso

proved in performance

New sanctuary building for a Presbyterian church in Stamford, Conn., has the shape of one of Christianity's ancient symbols.



EXTERIOR of fish-shaped church, viewed toward the tail in photo, consists of colored glass, concrete, and gray slate shingles. Walls lean about 15 deg from vertical.



PRECAST CONCRETE SECTIONS up to 10 tons in weight were erected on steel pipe shoring and connected with reinforced concrete to form continuous walls and roof.

New Church Building Looks Like a Fish

The fish, one of Christianity's oldest symbols, appears in a most emphatic way in the newly dedicated First Presbyterian Church in Stamford, Conn. The building itself is fish shaped.

The structure is 235 ft long, 54 ft wide and 60 ft high. Its exterior consists of some 150 precast concrete sections in about 60 different patterns and sizes. All are three- or four-sided plane shapes with 8 in. thick edge members. Weights of single sections range from ½ ton to 10 tons, lengths from 6 ft to 36 ft. Some sections are open frameworks containing 1 in. thick colored glass panels. Others are solid concrete. The latter group includes a number with interior panels that can be broken out later and replaced with glass. Most sections are stone concrete, but the bigger ones contain lightweight aggregate, which made them easier to handle.

• **No separate frame**—There are no interior supports, and the building has no frame in the conventional sense. But between the precast sections are 8 in. wide cast-in-place joints, which comprise a network of reinforced concrete members over the entire building. Also at one or two locations, reinforced concrete beams are required. Stiffness is provided at some locations by plane triangular sections joined in groups of four to form space frames.

The precast sections were erected on steel-pipe shoring and connected by welding or bolting together steel tabs projecting from the section edges and overlapping in the 8-in. open spaces. Also projecting from the edges into the spaces to be concreted were ¾ in. steel rods, which were used to fasten longitudinal bars in place. Good structural contact between the precast sections and the joint concrete was aided by shallow depressions or keyways, which had been cast into the section edges.

Cost of the project, including a parish hall on the church grounds, was $1½ million.

Harrison & Abramovitz, New York City architects, designed the fish-shaped sanctuary. Yen Liang was the architect in charge. Felix Samuely, London, England, was the consulting engineer on the superstructure. Edwards & Hjorth, New York, were foundation consultants. The precast sections were manufactured by Precast Building Sections, Inc., of New York City, in the firm's New Hyde Park, N. Y., plant and trucked to the site. The general contractor was DeLuca Construction Co., Stamford. Architects for the parish house were Sherwood, Mills & Smith, Stamford.

LUBRIPLATE
No. 630-2
Multi-Purpose Grease

ALSO PACKED IN

CONVENIENT GREASE GUN CARTRIDGES

Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

Briefs

• **Oft delayed dam**—Work will start this summer on construction of the $30 million Dillon Dam on the Muskingum River in Ohio—20 years after the project was authorized. More than $12 million has already been spent to relocate the Baltimore & Ohio Railroad tracks and in erecting a dike near Nashport. The U. S. Army Engineers will ask for bids in April on the main flood control structure. The project was delayed because of World War II and interrupted a second time by the Korean conflict. Completion is expected in 1961.

• **Who pays for hurricane protection?**—The Army Engineers New England Division didn't know the answer when discussing whether the federal government could share the cost of hurricane flood barriers planned in Narragansett Bay, R. I. Unlike beach erosition control, there is no precedent for federal participation in hurricane protection construction and the U. S. Bureau of the Budget is casting a wary eye on Rhode Island's request for same.

• **Tall power tower**—Pacific Power & Light Co. has started construction of a 115 kv transmission line across the Columbia River that will feature two towers 485 ft high. They will be among the tallest power towers ever built. The two-mile river crossing, near Portland, Ore., will require a total of seven towers and is being built to replace an existing 95 kv voltage submarine cable.

• **Rochester water**—A $55 million program to expand the water supply system in suburban areas of Rochester, N. Y., has been proposed by the Monroe County Water Authority. The program in three stages, is designed to meet the needs of the area until 1980. The supply is to be increased from XX to 196 mgd by 1965.

• **Foundation engineering award**—A $1,000 annual Alfred A. Raymond Award "to encourage originality in research and development in the field of foundation engineering" has been established by Raymond Concrete Pile Co. Participants in the competition will prepare papers on design and construction of foundations for structures. For complete instructions write to Alfred A. Raymond Award, Room 1214, 140 Cedar St. New York 6, N. Y.

• **Science center**—A $1 million science center will be built on a 10 acre site in Houston, Tex., by the Spring Branch Independent School District. The central building, which will feature exhibits as well as a 40 ft classroom, is due to be completed by September 1959. Future additions, including a 100 seat auditorium, an 80 seat planetarium and a semi-circle of exhibit halls will be made throughout a 15 tear expansion program. Almost all the rest of the land will be used for instructional purposes. The center is the first project of its kind to be undertaken by a school district.

• **Fluoridation turndown**—For the second year in a row the provincial legislature of Ontario, Canada, voted down legislation that would allow municipalities in the province to fluoridate their water supplies after referendums were conducted. A bill to allow Ottawa to fluoridate under special legislation was an infringement of civil rights (mass medication).

• **Rivers and harbors parley**—The 45th national convention of the National Rivers and Harbors Congress will meet at the Mayflower Hotel in Washington, D. C., May 14-16. Theme of the three-day assembly is: "The interrelationship of national defense and the nation's economic development." The congress will take up the cudgels for lifting of Budget Bureau ceilings on river expenditures from current work and new starts.

• **Kentucky road program**—Kentucky highway construction and maintenance spending for 1958 is expected to be over double that of 1957—$94 million as against $40 million. Average annual figure for the previous six years has been $34 million, with a high of $60.6 million for 1955. According to Arno Neiser, assistant state highway engineer, the $94 million does not include money for rights-of-way or engineering. The expenditure does depend on what he terms "an optimistic view of right-of-way-acquisition."

• **Grants to education**—The Kift-Mullen Memorial Foundation of Lehigh Structural Steel Co. has voted $67,000 for gifts to education, health and welfare organizations during 1958. The sum represents the largest amount granted in the 10 years of the foundation's existence. More than $29,000 is earmarked for education, including support of a continuing program providing 30 annual scholarships in several fields, including engineering.

• **Low-level route**—The Oregon State Highway Commission has chosen a route along the east bank of the Willamette River for freeway construction to carry U. S. 99 through eastside Portland. Estimated cost of project is $24.5 million.

HOW TO HANDLE WET JOBS

#41 of a Series

Project: Launching facilities, Cocoa Beach, Fla.
Engineering and supervision of construction: Loewy-Hydropress, Div. Baldwin-Lima-Hamilton Corporation, New York, N. Y.
Contractor: R. E. Clarson, St. Petersburg, Fla.
Pumping Contractor: WELLPOINT DEWATERING CORP., NEW YORK, N. Y.

Wellpoints lower 45 ft of ground water, relieve hydrostatic pressure, as...

Dewatering Speeds Progress at Cape Canaveral

Speed was urgent on this guided missile launching site. Confronted with numerous construction problems, the contractor decided to sublet his difficult dewatering operation.

• **The engineers' specifications** called for the launching pit to rest on a clay stratum 53 ft below ground surface that had water-bearing sand above and below it. So that no disturbance of this clay stratum would occur due to unbalanced hydrostatic pressure, a dewatering system was specified.

• **Solution: Griffin** engineers designed a 3-stage pressure-relief and dewatering system that successfully relieved 45 ft of hydrostatic pressure while also lowering 45 ft of water in the launching pit and dewatering the overall construction area to a depth of 20 ft . . . all this done in record time, dependably, economically, by Griffin.

GRIFFIN WELLPOINT CORP.

DEWATERING • SOIL STABILIZATION • JETTING

GENERAL OFFICE: 881 East 141st St., New York 54, N. Y.

Branches: Jacksonville, Fla. • West Palm Beach, Fla. • New York, N. Y. • Hammond, Ind. • Houston, Tex.
In Canada: Construction Equipment Co., Ltd., Toronto • Montreal • Edmonton • Vancouver
In Venezuela: Drew Bear & Sons C.A., Caracas • Maracaibo

Tough Job Conditions at Hildebrand Dam Beaten by 100% Bucyrus-Erie Lineup

Hildebrand dam and lock are rising on the Monongahela River in rugged West Virginia mountain country 4½ miles upstream from Morgantown. All excavators and cranes on the project are Bucyrus-Eries. These include a 71-B, a 54-B, two 38-Bs, and a 22-B Transit Crane. All have special jobs to perform; all are doing them well.

Hildebrand Contractors, a joint venture of J. A. Jones Construction Co., Charlotte, N.C., and Charles H. Tompkins Co., Washington, D. C., will complete the 3-yr. project in July, 1959. The lock will have a usable length of 600 feet, a width of 84 feet, and a lift of 21 feet. The dam will be 530 feet long and 70 feet high. These structures will replace two other locks and dams on the Monongahela.

To keep navigation flowing without interruption, the contractor is constructing the dam and lock in four stages behind cofferdams. Despite cramped working quarters and bad weather that held up progress for almost a full season, Hildebrand Contractors are on schedule.

Bucyrus-Erie excavators and cranes will keep your job on schedule, too. Get the facts from your Bucyrus-Erie distributor now.

463E38

Termed the busiest piece of equipment on the job, this 22-B Transit Crane handles a variety of jobs. These include loading and unloading trucks, hoisting forms into place, and handling steel and forms. The machine is equipped with a 65-ft. boom and 20-ft. jib. Defying steep grades, the 22-B moves quickly to scattered locations at the job site.

BUCYRUS ERIE

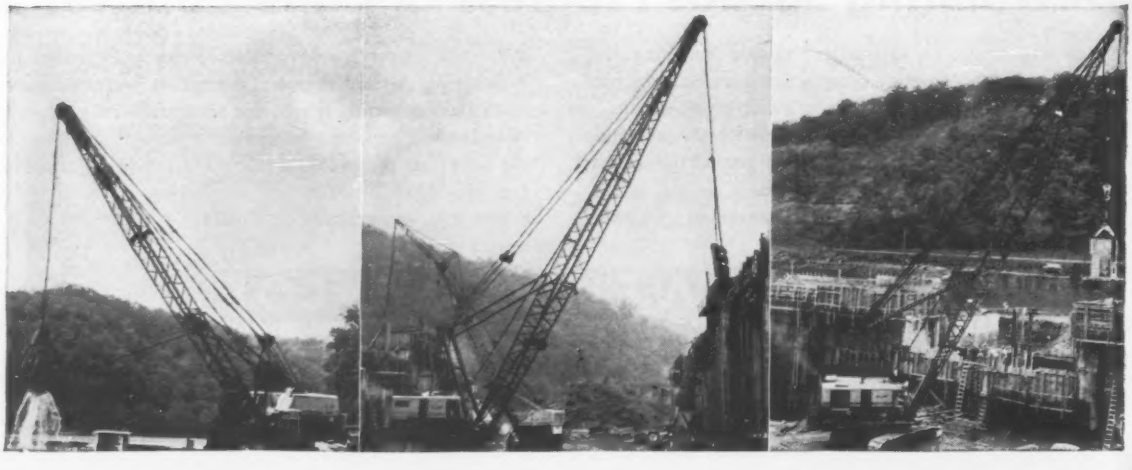
A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Two 38-Bs cooperate to excavate 4,000 yards of rock and 10,000 yards of common material for dam abutments. One 38-B excavates and loads material onto a barge for a trip across the river. The other, working on the opposite bank, unloads this material into end dumps for hauling to regular dump piles.

Team work is important on the Hildebrand contract. Here, the 54-B with 90-ft. boom sets forms and steel. When not pouring concrete, the 71-B works along with the 54-B on this job. Before it was assigned to this section of the work, the 54-B drove piles for cofferdams.

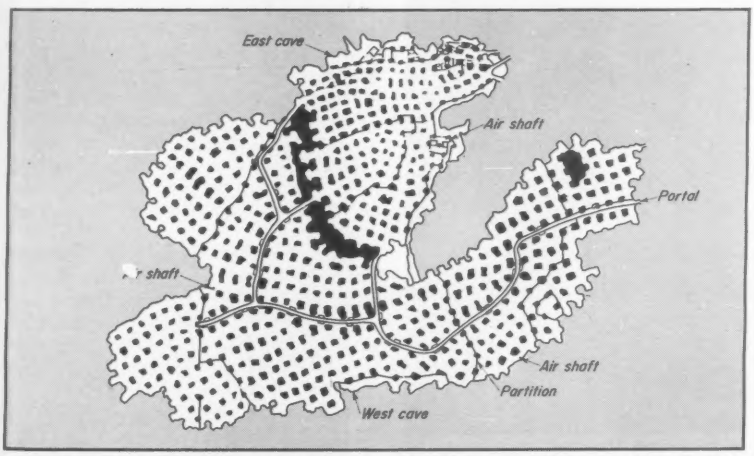
Like other equipment on the job, the 71-B does double duty. After excavating 300,000 yards of common material and 125,000 yards of rock, it pours the entire bulk concrete load of 130,000 cubic yards. Fitted with a 4-yd. bucket on a 90-ft. boom, the 71-B reaches easily to 65-ft. radius . . . works quickly and surely.



Abandoned limestone mine in Kansas is converted into dehumidified machine-tool storage space at a cost of $2 per sq ft.

Low-Cost, High-Quality Storage Cavern

ENTRANCE to 42 acres of underground storage. Stratified, verticle jointed rock ledges above portal had to be strengthened with 17 ft long rock bolts.



CONVERSION OF MINE consisted of scaling bad rock, extensive rock bolting, building concrete road and installation of drainage facilities and dehumidification equipment.

Critical wartime machine tools are being moved by the bargeload into an ideal warehouse—26 acres of dehumidified limestone cavern recently converted from an old mine at a cost of about $2 per sq ft.

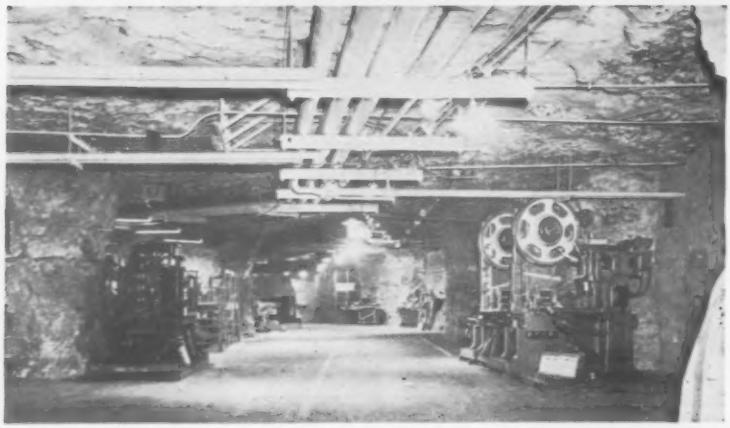
The giant cavern, at Atchison, Kan., comprising 60 acres, was originally acquired by the U. S. government in 1944 and 16 acres in the so-called East Cave, were developed as a cold storage plant for foodstuff. This use, which has been attacked as a multi-million bobble, didn't work out. So in 1952, Army Ordnance took over the East Cave for machine tool storage, converting existing refrigeration equipment—left over from the cold storage experiment—into a functionally sound but expensive-to-operate dehumidification system.

In 1954, Ordnance acquired the adjacent 44 acre West Cave and had the Army Engineers spend the next three years and $2.1 million to develop 26 acres of it, or 1 million sq ft, as tool storage. In addition, the new dehumidification system was extended to the 600,000 sq ft East Cave.

Use of the cavern for machine tool storage stems from sad experiences during World War II and the Korean conflict. After Pearl Harbor, mobilization limped along for months while the lathes and drill presses with which to make the guns were manufactured. When Korea broke out, it was found that improper warehousing of the World War II tools had allowed many to rust out while their motors and other sensitive parts, removed to proper storage, could not be readily located. Getting the tools back into service was a nightmare.

• **Underground construction**—The original mining of limestone at Atchison was accomplished by the room and

. . . Caverns used to store machine tools



FINISHED STORAGE AREA is maintained at 75 F and 40% relative humidity to house critical wartime machine tools. Army Engineers built facility for Army Ordnance.

pillar method, leaving pillars approximately 25 ft square and 65 ft on centers. First stage of the West Cave conversion comprised removing unsound "drummy" rock from the roof, rock bolting, some tunneling and preliminary cleaning of the cave.

Scaling of the drummy rock meant removing a 4 in. layer over about 15% of the area. A wagon drill mounted on a boom on the back of a truck was equipped with a long chisel-bit drill steel. This rig, functioning like a jackhammer, made rapid progress.

Rock bolts 17 ft long had to be placed horizontally in the ledges of rocks above the West Cave entrance to strenghen the portal and to keep loose boulders from falling. A number of methods were used to remedy weak areas in the interior limestone. Roof bolts were placed on 5 ft centers over a room; cracks were stitched with a pattern of diagonal and vertical rock bolts; and pillar capitals were strengthened by two rows of diagonal bolts placed around the pillar periphery.

Slit, 1 in., wedge-type roof bolts with rolled threads were used, varying from 5 to 8 ft in length in the interior. Compression pads consisting of a rubber washer between steel plates were installed to check tension and anchorage of the roof bolts. Periodic tension readings are taken on the washer by a circumferential hoop gage.

Preliminary cleaning was done with bulldozers, loaders and trucks.

The second stage work included interior concrete access roads, installation of partitions, dehumidification equipment, lighting, drainage and exterior facilities.

A 20-ft-wide unreinforced 6 in. concrete road, winding from the portal, serves as the main artery for travel through the installation. It was one road job where the contractor didn't have to worry about weather conditions—the cavern was free from rain and sun and the temperature was a constant 55 F.

Other than the access road, the cavern is unpaved. It was necessary to get the mine as clean as possible so a minimum amount of dust would prevail when the dehumidifying system was in use. Vacuum cleaning worked on the pillars but the floor required mechanical and hand brooming.

• **Low cost dehumidification**—Drying of 1.6 million sq ft is quite a problem, especially when the water load from the rock is not readily determinable.

When the East Cave refrigeration system was altered, as much as 6,000 gal of water a day were removed at first. Later, as water flow from the rock decreased, only 1,000 gpd of moisture was removed. To save on operating costs, small, solid desiccant-type dehumidifiers were scattered through the East cavern and their operation provided some basis for design of the new system.

A dry desiccant system was selected to serve both East and West caves. The installation consists of two dual-bed, gas-fired dehumidifiers. Each unit can remove 1,085 lb of water per hour, with the condition of entering air being 74.5 F dry bulb, 59.8 F wet bulb, 50 F dewpoint, and 53 grains per lb of dry air. Air flow of each unit is 50,000 cfm. The air in both caverns is kept at 75 F and 40% relative humidity.

The dehumidifying units are connected by a passage 600 ft long formed by tunnels and concrete block walls to a plenum from which air is distributed to the storage area in ducts. These vary in size from 64 to 18 in. in dia, with runs up to 2,000 ft. The dehumidifiers are controlled by a dewpoint controller which shifts automatically to outside air when conditions allow.

Army Ordnance does more than operate an underground warehouse at Atchison. Seminars are held twice a month to train military and civilian personnel in proper tool storage. Research is carried on in a testing chamber capable of producing temperatures from −20 F to 120 F, humidities ranging from 5 to 100% and which can simulate rain, sleet and salt spray. In 30 days a piece of equipment can be subjected to the equivalent of 20 years of weathering.

The contractor-operator of the facility is the Page Airways, Inc., Rochester, N. Y. The recent construction was directed by the Kansas City District of the Corps of Engineers. Contractor for the first stage was George W. Kerford Quarry Co. of Atchinson, original developer of the mine for concrete aggregate. Sharp Bros. Contracting Co., Kansas City, Mo., handled the second stage work.

RUBBER COMPRESSION PADS were installed to measure roof bolt tension.

AIR SHAFT 11 ft in dia takes in outside air, 4½ ft dia shaft exhausts it.

Putting a "Hole" Through a Railroad Fill?

Near Bonners Ferry, Idaho, the Great Northern's main line track extends along a river that sometimes floods lowlands on the other side of the fill. Supplementing an inadequate small culvert, this Armco Liner Plate structure was installed to quickly equalize water levels and minimize danger of washouts.

Liner Plate forms railroad underpass for school children.

Armco Pipe as utility conduit is being jacked through fill.

MULTI-PLATE Pipe installed for drainage under new railroad.

You can do it fast and easy with a durable Armco metal product

It often happens that a tunnel, conduit or underpass is required through a railroad fill. Usually, the best solution is an Armco Liner Plate structure. The reason? Pound-for-pound, Armco Liner Plates are the strongest made.

Assembly is simple; all bolting is from within the structure. One man can carry, handle and install plates. Installation keeps pace with excavation. Armco Liner Plates are supplied in a wide selection of sizes and shapes.

Depending on conditions and size requirements, Armco Corrugated Metal Pipe or MULTI-PLATE® Pipe may also be utilized for tunnels or conduits through railroad fills. Installation may be open-cut, or by jacking. Wide range of sizes.

These structures may be installed by local contractors. Or, if you prefer, the project can be handled by Armco Construction Department on a fixed-price, subcontract basis.

* * *

These structures represent just one group in the more than 30 Armco products for engineering construction. Fill in and mail the coupon for more data. Armco Drainage & Metal Products, Inc., 4208 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco Drainage & Metal Products, Inc.
4208 Curtis Street, Middletown, Ohio

☐ Send my copy of "Manual of Tunnels, Underpasses and Conduits"

☐ Have representative call

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Get Your FREE Manual!

SONOCO
List of Distributors

ORDER

SONOCO
Sonotube®
FIBRE FORMS
from the distributor nearest you

ALABAMA
Virginia Steel Co., Inc.
1007 37th Place, North
Birmingham, Alabama

Underwood Builders Supply Co.
401-499 South Royal St.
P. O. Box 1587
Mobile 9, Alabama

ARKANSAS
Arkansas Foundry Co.
P. O. Box 231
Little Rock, Ark.

CALIFORNIA
W. J. Burke & Co.
6235 E. Telegraph Rd.
Los Angeles, Calif.

W. J. Burke & Company
115 "N" Street
Sacramento, Calif.

W. J. Burke & Company
2690 Harrison Street
San Francisco, Calif.

W. J. Burke & Company
3742 Midway Drive
San Diego, Calif.

COLORADO
K. C. Construction Supply Co.
19th Ave. & Bryant Street
Denver, Colorado

CONNECTICUT
Hartford Building Supply Co.
593 Windsor Street
Hartford, Conn.

FLORIDA
Construction Products Corp.
6865 N. W. 36th Avenue
Miami 47, Florida

Panama Machinery & Supply Co.
P. O. Box 850
Panama City, Fla.

Shirley Brothers, Inc.
P. O. Box K
Pahokee, Florida

Florida Steel Corporation
Florida Steel Products Division
215 South Rome Avenue
Tampa, Florida

Florida Steel Corporation
Florida Steel Products Division
115 Copland
Jacksonville, Fla.

Florida Steel Corporation
Florida Steel Products Division
1818 Atlanta Avenue
Orlando, Florida

CBS Division of the Maul Industries, Inc.
505 Park Street
West Palm Beach, Florida

GEORGIA
Maxwell & Hitchcock, Inc.
191 Simpson Street, N. W.
Atlanta, Georgia

ILLINOIS
Gateway Tube & Coupler Corp.
3233 West Grand Avenue
Chicago 51, Illinois

INDIANA
F. J. Folz Company
1725 W. Franklin St.
Evansville 12, Indiana

Hugh J. Baker Company
602 W. McCarty Street
Indianapolis, Indiana

Moss Engineering Corp.
312 Standard Building
Fort Wayne 2, Indiana

IOWA
Stetson Building Products Co.
S. W. 6th & Murphy
Des Moines, Iowa

KANSAS
The Carter-Waters Corp.
2440 Pennway
Kansas City 8, Missouri

KENTUCKY
American Builders Supply Co.
1044 E. Chestnut Street
Louisville, Kentucky

LOUISIANA
Ero, Incorporated
2829 Choctaw Drive
Baton Rouge 1, La.

Jahncke Service, Inc.
814 Howard Avenue
New Orleans, La.

Ideal Building Materials, Inc.
P. O. Box 1545
1730 Claiborne Street
Shreveport, La.

MAINE
Passmore Lumber Company
Camden,
Maine

MARYLAND
Gateway Tube & Coupler Corp.
2003 Lovegrove Avenue
Baltimore, Maryland

MASSACHUSETTS
Waldo Brothers Company
202 Southampton Street
Boston, Mass.

MICHIGAN
National Construction Specialties Co.
5252 Oakman Blvd.
Dearborn, Michigan

Capitol Steel Division of
The Hausman Steel Company
P. O. Box 44
1425 Fuller Street
Lansing, Michigan

MINNESOTA
Builders Engineering Company
501-505 Lynnhurst Avenue
St. Paul, Minn.

MISSISSIPPI
Jackson Steel Company, Inc.
969 South Roach Street
Jackson, Miss.

MISSOURI
Basic Materials, Inc.
650 Rosedale Avenue
St. Louis, Mo.

MONTANA
Madden Construction Supply Co.
Box 1522
Billings, Montana

Madden Construction Supply Co.
700 South Second Street
Great Falls, Montana

NEW JERSEY
Igoe Brothers, Inc.
234 Poinier Ave.
Newark 5, New Jersey

NEW MEXICO
W. J. Burke & Company
606 Louisiana Blvd., S. E.
Albuquerque, New Mexico

NEW YORK
Igoe Brothers, Inc.
50-25 72nd Street
Woodside 77, New York

Buffalo Builders Supply Co.
2119 S. Park Avenue
Buffalo, New York

Armor Products, Inc.
74 Trinity Place
New York 6, New York

Paragon Supply Company
112 North Beech Street
Syracuse, New York

American Hardwall Plaster Co.
728 Broad Street
Utica 2, New York

Voorheesville Distributors
46 Maple Avenue
Voorheesville, New York

NORTH CAROLINA
Contractors Service, Inc.
317 W. Worthington Avenue
Charlotte, N. C.

King-McIver, Inc.
P. O. Box 1498
Greensboro, N. C.

Plastics & Fiber Glass Products Co.
333 S. West Street
Raleigh, N. C.

OHIO
Gateway Tube & Coupler Corp.
2836 Colerain Ave.
Cincinnati, Ohio

Ernest F. Donley's Sons, Inc.
10203 Miles Avenue
Cleveland, Ohio

Columbus Coal & Lime Co.
1150 Sullivant Ave.
Columbus, Ohio

Hausman Steel Company
P. O. Box 416
Toledo, Ohio

OKLAHOMA
Kilpatrick Brothers
820 N. W. Fourth Street
Oklahoma City, Okla.

OREGON
W. J. Burke & Company
2344 N. W. 21st Avenue
Portland, Oregon

PENNSYLVANIA
Industrial Construction Supply Co.
1119 Lincoln Highway
East McKeesport, Pa.

Penn-Mar Supply Co., Inc.
Carlisle Street
Hanover, Pa.

Austin Supply Company, Inc.
20th & Venango Streets
Philadelphia, Pa.

Kingston Lumber Company
181 Pringle Street
Kingston, Pa.

SOUTH CAROLINA
Van-Smith Building Materials Co.
276 E. Bay Street
Charleston, S. C.

Seaber & Aiken
P. O. Box 5271
1105 Marlboro Street
Columbia, S. C.

Chapin Company
Myrtle Beach, South Carolina

S. C. Steel Corporation
P. O. Box 71
Greenville, S. C.

SOUTH DAKOTA
Gage Brothers Concrete Products Co.
West on Highway 16
Sioux Falls, S. D.

TENNESSEE
T. T. Wilson Company
1255 Central Avenue
Chattanooga 8, Tenn.

Wilson-Weesner-Wilkinson Co.
202 W. Morelia Ave.
Knoxville, Tenn.

Fischer Lime & Cement Co.
269 Walnut Street
Memphis, Tenn.

Wilson-Weesner-Wilkinson Co.
310 S. Second St.
Nashville, Tenn.

TEXAS
South Texas Materials Co.
Oso at Powers Street
Corpus Christi, Texas

Ranney Builders Specialty Co.
5215 E. First Street
Austin 31, Texas

Blue Diamond Co.
2722 Logan Street
Dallas 15, Texas

Peterson Lumber Co.
1630 Texas Street
El Paso, Texas

Valley Concrete Pressure Pipe Co.
P. O. Box 1751
Harlingen, Texas

Cain's Builders Supply Co.
1933 W. Vickery Blvd.
Fort Worth, Texas

Black-Brollier, Inc.
3010 Dixie Drive
Houston 4, Texas

Childs Ready Mix Concrete Co.
P. O. Box 2227
Abilene, Texas

Duo Distributors, Inc.
7th St. & Avenue K
Lubbock, Texas

Rufus A. Walker Company
401 Delgado Street
San Antonio 12, Texas

UTAH
Intermountain Concrete Specialties Co.
329 Pierpont Avenue
Salt Lake City, Utah

VERMONT
Henry M. Tuttle Co., Inc.
113 Depot Street
Bennington, Vermont

VIRGINIA
Batchelder & Collins, Inc.
Granby St. & N. & W. R.R.
Norfolk, Virginia

McIlhany Equipment Co., Inc.
2104 N. Hamilton Ave.
Richmond, Va.

McIlhany Equipment Co., Inc.
Corner 14th St. & Center Ave., N. W.
Roanoke 2, Virginia

WASHINGTON
W. J. Burke & Company
2015 Airport Way
Seattle, Washington

WEST VIRGINIA
Ira F. Kuhn Co.
P. O. Box 5176
Charleston 1, West Va.

WISCONSIN
Boehck Construction Equipment Corp.
2404 W. Clybourn Avenue
Milwaukee 3, Wisconsin

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO
Construction Products

SONOCO PRODUCTS COMPANY

NEW Seamless* Sonotube®

FIBRE FORM

produces the

SMOOTHEST

continuous concrete column surface

you've ever seen!

...COLUMNS

- √ FORM BETTER
- √ STRIP QUICKER
- √ FINISH EASIER

LOOK AT THIS UNRETOUCHED PHOTO

of a concrete surface taken after stripping the great new Seamless Sonotube Fibre Form from the column.

This great new form is the latest addition to Sonoco's outstanding line of fibre forms . . . all developed in Sonoco's Research Laboratories to meet specific needs of the construction and building industries.

All Sonoco Fibre Forms provide the most economical and fastest method of forming round columns of concrete.

For your next job choose from these three types . . .

SEAMLESS SONOTUBE® a premium form specifically developed for use where exposed finished columns are desired.

"A" COATED SONOTUBE® the standard form for exposed columns.

"W" COATED SONOTUBE® for unexposed or exposed columns where finishing is not required.

All three come in sizes from 2" to 48" I.D. up to any length which can be shipped. Order in desired lengths or saw to your requirements on the job.

*PAT. APPLIED FOR.

For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY

1497

Now...A New Dependable Source For Prestressing Strand

Leschen Prestressing Strand is produced by a new continuous flow technique in today's most thoroughly modern wire mill. It was designed, built and equipped specifically to meet or beat the industry's most exacting specifications.

Here new processes, new machines and new methods of quality control are employed to maintain highest quality throughout and maximum uniformity in all essential properties. Ample provision has been made, too, for capacity to satisfy this fast growing industry's need for prompt delivery.

Behind this new enterprise lies nearly a century of experience in wire rope making... your assurance of the utmost in dependability. Write today for full information including specifications and prices to—Leschen Wire Rope Division H. K. Porter Company, Inc., St. Louis, 12.

LESCHEN
PRESTRESS STRAND

H. K. PORTER COMPANY, INC.

LESCHEN WIRE ROPE DIVISION

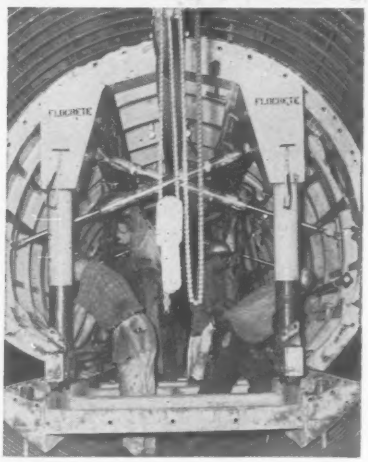
Divisions of H. K. Porter Company, Inc.: Connors Steel, Delta-Star Electric, Disston, Leschen Wire Rope, Quaker Rubber, Refractories, Riverside-Alloy Metal, Vulcan-Kidd Steel, W-S Fittings, H. K. Porter Company (Canada) Ltd.

Pneumatic concrete placing train, hydraulically powered forms expedite lining of 4.2 miles of 9½ foot diameter sewer tunnel in Los Angeles

CONCRETE PLACER is filled with concrete through bin and chute assembly. Each of the four containers haul 3 cu yd of mix.

PLACER DISCHARGE rate is controlled by special valve regulating air pressure.

INVERT BRIDGE 16 ft long form jumbo is set to grade and fixed with steel bolts. Then before unrolled T-shaped plastic lining material is secured, the collapsed . . .



FORM is moved in, rams extend sides, chain hoists lower skirts.

Mechanization Speeds Tunnel Lining

Lining for Los Angeles' $6.2 million North Central Outfall Sewer is being applied quickly by using pneumatic concrete placing equipment and hydraulically powered collapsible forms.

The joint-venture by Arundel Corp., L. E. Dixon Co. and Kemper Construction Co. consists of two 9½ ft dia tunnels—one 4 miles and the other 1,500 ft long.

A noteworthy feature of the concreting phase is the placing equipment developed by M. E. Kemper. Four 3 cu yd capacity placers are linked, rail-mounted and powered by a locomotive. Three such trains are in operation at one time; and to provide for passing, the tunnel was widened at two locations.

An 8 in. dia discharge line is connected to the placers with a quick coupler, and a pair of 2 in. lines feed air under pressure around a turnip-shaped valve into the bottom of the placer.

The air agitates the mix and forces it through the discharge pipe to the forms. As the forms are filled, the train moves slowly backward until the container is emptied. The empty car is then disconnected and moved back. The next car with a full container then moves into position.

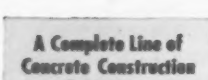
Although this particular job required maximum ¾ in. aggregate, the placing equipment can handle larger sizes.

Approximately 2 cu yd of concrete were placed for each linear foot of tunnel lining which was 10½ in. thick at the top and sides and 15½ in. thick at the invert.

The 16-ft-long, plastic-lined, collapsi-

New STOW 1-MAN VIBRATOR saves time... cuts costs!

A Complete Line of Concrete Construction Equipment.



Vibrating Screeds

Grinders

Roto-Trowels

Vibrators

This lightweight, high-speed STOW YU Vibrator is extremely compact and easy to carry. It's a rugged, 60-cycle motor-in-head vibrator with completely sealed vibrator powered by a Universal motor which drives the head at 12,000 to 15,000 VPM.

The YU features strong, wear-resistant casing which covers the electric wires and also acts as a handle; a completely encased off-on switch located 7 feet from the head; and a 25-foot cable that plugs into any regular AC or DC volt outlet. Built for ease of operation and safety, the YU has a thermal overload protection which shuts off the motor in case of heat or overload.

Standard equipment includes: Model YU (2⅝") vibrator head and 25 feet of cable. The YU is available with 7, 14 or 21 feet of 4-ply, neoprene covered casing.

For more information on the new Stow YU Vibrator, phone your nearest Stow Distributor. (You'll find him listed in the yellow pages of your phone book under "Concrete Vibrators") . . . or

STOW

Manufacturing Co.
19 Shear Street
Binghamton, New York

MAIL THIS COUPON *TODAY!*

Stow Manufacturing Co. 19 Shear Street
Binghamton, New York

I'm interested in the Stow Line of Concrete Construction Equipment. Send a complete catalog and name of nearest distributor.

I am particularly interested in_____

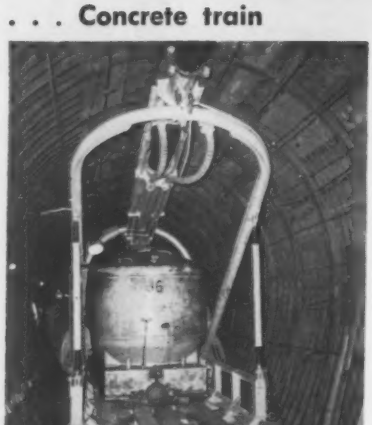
Name_____ Title_____

Company_____

Street_____

City_____ State_____

. . . Concrete train



EMPTY PLACER backs up beneath discharge line as full car moves to coupler.

ble forms are made up of five hinged sections—a top, two sides and two skirts. The invert forms are separate.

The unit is maneuvered by a hydraulically powered jumbo. And double acting positioning rams place the side form while the skirts are raised or lowered with pneumatic chain hoists.

The plastic lining material—formed with T-shaped ridges on the concrete side—is fastened to the forms by ½-in.-wide steel banding strips at 16 in. centers. The forms are kept from moving during concreting operations by steel flotation pins that pierce the plastic lining and bear against tunnel timbers.

Because working space is limited, the tunnel lining job is scheduled into three work periods. The afternoon and evening shift is used for the erection of reinforcing steel and resupplying.

During the night and early morning shift, forms are stripped and reset and any remaining reinforcing steel is installed. Only forms for the next day's concrete placement are set up.

All concrete is cast during the day shift. No other work is done at this time so that no operation will interfere with the train of placers. R. B. Kemper is project manager on the tunnel lining work for the Arundel-Dixon-Kemper joint venture. John Witte, chief engineer of Kemper Construction Co., laid out the equipment spread. The tunnel lining procedure described above is an improvement over a similar job by the Kemper organization (ENR Apr. 3, 1947, p. 68).

The job is a project of the City of Los Angeles under the Board of Public Works with Cushing Phillips, Rear Adm. CEC USN (ret), as president. Design was by Hyperion Engineers, a joint venture of Holmes & Narver, Inc.; Daniel, Mann, Johnson & Mendenhall and Koebig & Koebig.

TONS FOR PENNIES

Four-yard bites, fast cycle time made faster by electric swing and the power and strength for the toughest digging enable the Marion 111-M to move tons for pennies. Now bigger, stronger and better than ever, the 111-M is proving this on hundreds of jobs all over the world, including this New England toll road project. Look for the 111-M in mines, quarries and heavy construction everywhere. Ask your Marion Distributor for complete information.

You get **MORE** *with* **MARION**

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION POWER SHOVEL CO. • MARION, OHIO

A Division of Universal Marion Corporation

Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).

☐ Have a salesman call.

Name ..... Title .....

Company .....

Street .....

City ..... Zone ..... State .....

TAYLOR MEMORIAL LIBRARY

CENTENARY COLLEGE FOR WOMEN
HACKETTSTOWN, NEW JERSEY

AWARD WINNER- *1955 Award of Merit, AIA*

The architect's objective was to design a library building for a college campus which, through its convenience of arrangement, and lively and inviting spirit would attract the students.

A combination of brick bearing walls and a steel frame allowed generous, uncluttered interior spaces and large glazed areas. Open-web steel joists provided light-weight roof construction and wide, glare-reducing overhangs. Joists and girders were protected by a fireproof acoustical ceiling. The steel columns, on the other hand, were left exposed. Thus they relate better to the expression of the steel window walls and metal book stacks, and by their slimness they add to the light spaciousness of the reading room.

This system was accepted after an analysis of comparative fire insurance rates and construction costs proved it to be the optimum solution.

Jan Hird Pokorny, Architect, New York City

Structural Engineer:
A. D. Ateshoglou

General Contractor:
Fred J. Brotherton

Steel Fabricator:
Albert Smith's Sons

Structural Shapes:
Bethlehem Steel Company

A SIGNIFICANT NEW STRUCTURE . . . FRAMED WITH STEEL

This is the third in a series by Bethlehem Steel Company, Bethlehem, Pa.

BETHLEHEM STEEL

Spray Fireproofing on Steel Floors

A new six-story steel-frame building in Los Angeles is a good example of a newly developed fireproofing technique —spraying of lightweight plaster on the underside of steel floor decking.

A two-hour fire rating for the steel deck results from the 2½-in.-thick concrete fill on top and a 1 in. thickness of sprayed material on the bottom—in this case vermiculite acoustical plaster. Underwriters tests sponsored by the steel deck manufacturer in cooperation with the lightweight-aggregate supplier resulted in acceptance of the fireproofing method. It replaces hung-ceiling fireproofing.

The result is weight saving, speedier erection and flexibility of arrangement of mechanical equipment and ceilings. The building can be fireproofed while outer walls are still going up. Stairs may be installed immediately and the fireproofing later sprayed into small openings where stair stringers pass beams.

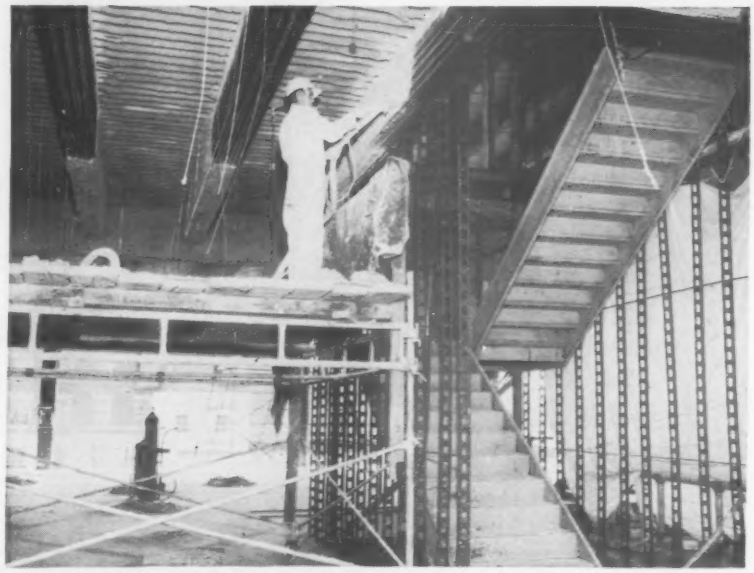
In an office building designed for varied tenancies and ceiling heights, construction is not delayed until the ceiling pattern and a permanent partition plan are determined. Fused protection is not needed for recessed lighting fixtures, air diffusers and return-air grills since the fireproofing is above the ceiling plane. Office space can be rearranged at any future time without penetrating the fireproofing membrane.

The structure so treated is the $3.5 million, air-conditioned Continental Companies Building, which is 110 by 158 ft in plan. It has about 100,000 sq ft of floor area and is in a No. 1 fire zone.

The floor construction consists of cellular steel units 2 ft wide, laid with the flat side down. Fluted steel decking was used in the service core where extensive electrical facilities are not required. The steel is topped with 2½ in. of concrete.

The underside of the steel is fireproofed with 1 in. thick vermiculite acoustical plaster, sprayed directly on the metal without lath or reinforcing. The first coat was applied ⅝ in. thick and leveled. The ⅜ in. second coat was not touched with hand tools since the fireproofing will not be exposed. A gage was used to assure uniform thickness.

The journeymen worked from small rolling scaffolds. The plaster was sprayed on with a hydraulic plaster pump, using 50 ft of 1½ in. hose and about 10 psi of air pressure. The material was mixed on each floor and wheeled to the pump's hopper. Hanger wires for duct work, electrical conduit and a suspended acoustic ceiling were placed through the



WORKMAN SPRAYS FIREPROOFING on metal lath furred out from beam. Vermiculite acoustical plaster is also sprayed directly on underside of fluted steel deck.

NEW 7 STORY BUILDING in Los Angeles has sprayed on lightweight fireproofing on entire interior. Result is substantial weight saving and flexibility of ceiling arrangement.

From here on,

all you need is a wrench

Seattle, Washington, engineered this 8585-ft. addition to its growing network of Dresser-Coupled steel water lines. All joints on the 40-ft. lengths of 48-inch pipe were Dresser-Coupled. The line was laid by Harbor Construction Company.

The fast way is the Dresser way

No unforeseen delays, no unforeseen costs when you join water pipe the Dresser way. Non-rigid Dresser Couplings go on fast . . . without expensive equipment or specialized labor. All you need is a wrench . . . and with long lengths of steel pipe, you need fewer joints. Bottle-tight joints make it unnecessary to allow for leakage. Figure your next water line with Dresser Couplings . . . you can calculate your costs accurately . . . and *lower!*

It takes two man-minutes per bolt with a Dresser Coupling.

Bradford, Pennsylvania
Chicago
Houston
New York
Philadelphia
San Francisco
Toronto

DRESSER MANUFACTURING DIVISION

ONE OF THE DRESSER INDUSTRIES

. . . Spray fireproofing

steel decking before fireproofing started.

Ceiling heights vary between floors and within certain floors. The typical height from slab to decking is 14 ft; finished height, 9 ft. Space between ceilings and the floor above is used as a return-air plenum.

Typical office lighting is a flush 2x4 ft unit with a plastic diffuser that fits into the modular pattern of the ceiling.

Following long accepted practices, interior columns were furred out with diamond-mesh metal lath and fireproofed with machine-applied vermiculite plaster. Beams and girders, wrapped individually, were furred out with channel iron and high-rib lath, and fireproofed in the same way. A machine operating with 5 psi. of air pressure was used for this operation.

Exterior columns and spandrel beams of structural concrete tie into a concrete spandrel panel which is 6 in. thick for seismic requirements. Continuous vertical window walls of glass and porcelain enamel alternate with vertical sections of architectural concrete.

Aside from the central utility core, there are only four exposed columns on each floor, thus permitting a wide variation in office layout in a large open space. Interior partitions are of three types: steel stud, metal lath and plaster; gypsum lath and plaster; and all metal. All services are in the center core of the building.

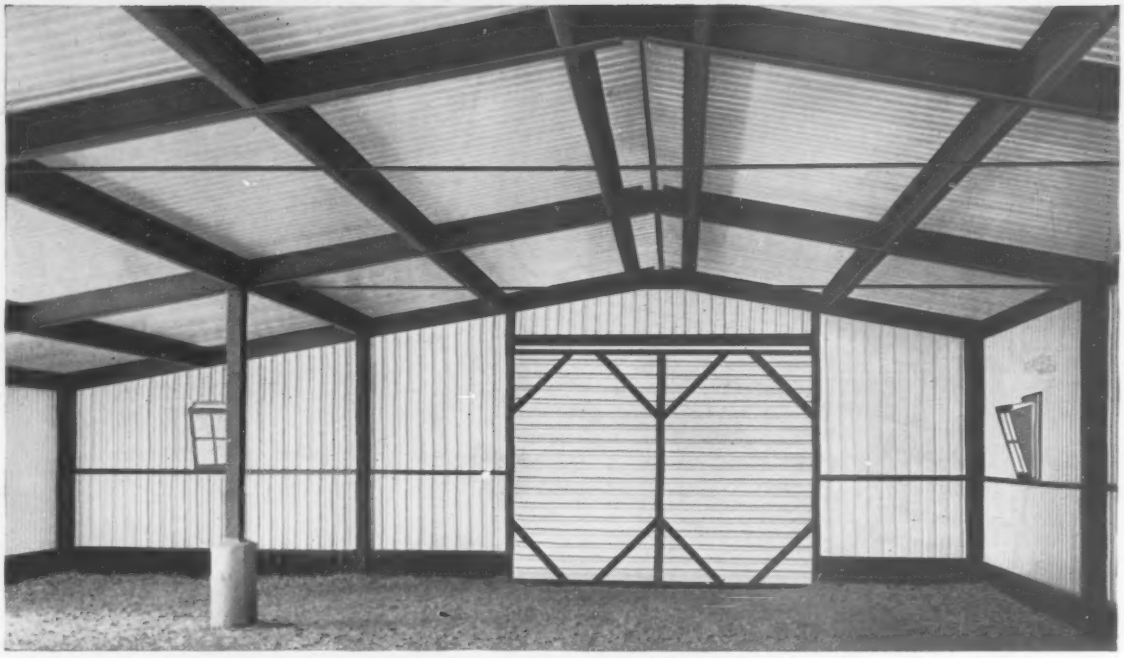
The site comprises about one acre. A six-level reinforced concrete garage at the rear has a capacity of 180 cars.

Architect on the project was Claud Beelman & Associates, under the direction of Ernest C. Wilson, Jr., associate architect. Structural design was by Brandow and Johnston. General contractor was Carter Co., with steel erection by Bethlehem Pacific Coast Steel Corp. The fireproofing was applied by George M. Raymond & Co.

USPHS Granted $760,000 For Water, Sewage Research

The U. S. Public Health Service supported 82 projects conducting research studies in the field of sanitary engineering during fiscal 1957. Forty of the grants were for new projects and 42 were for continued support of studies already underway. These grants included awards to investigators working in 46 institutions in 27 states and the District of Columbia.

The PHS also instituted a research fellowship program for advanced study in the field of sanitary engineering. Five fellowships were awarded. A complete listing of projects is available from PHS in Washington, D. C.



Stran-Master offers plenty of unobstructed interior space.

Now, own this all-steel, all-purpose Stran-Master warehouse . . . at less than your present rental cost

A new concept in industrial-commercial buildings! The permanent all-steel Stran-Master . . . ideal for warehousing, manufacturing, retail or service operations, or general utility. It's available now at prices 30-50% less than most other types of construction. It's easily financed through the Stran-Steel Purchase Plan.

Stran-Master is available in the size you want . . . can be erected in days by your dealer or your own force. Insulation is simple; operating costs (heating, insurance, etc.) are surprisingly low.

You can save plenty on a handsome, quality-engineered Stran-Master building—designed to fit your operation. Save on materials, on construction costs, on maintenance. And you can finance it over a 5-year period. Get the details now. Send for our free illustrated catalog, or see your dealer.

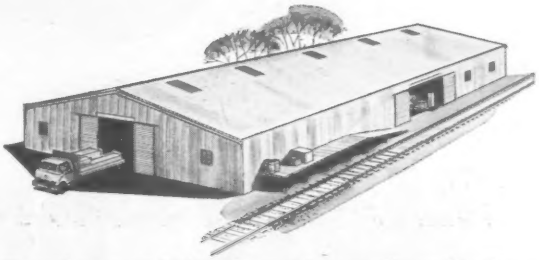
Stran-Steel dealers are listed in the Yellow Pages under *Steel Buildings* or *Buildings—Steel.*

Dept. 27-5

STRAN-STEEL CORPORATION

Detroit 29, Michigan • Division of

NATIONAL STEEL CORPORATION



Permanent good-looking Stran-Masters offer quality housing for business and industry at lowest cost per square foot.

Stran-Steel Corporation, Dept. 27-5
Detroit 29, Michigan

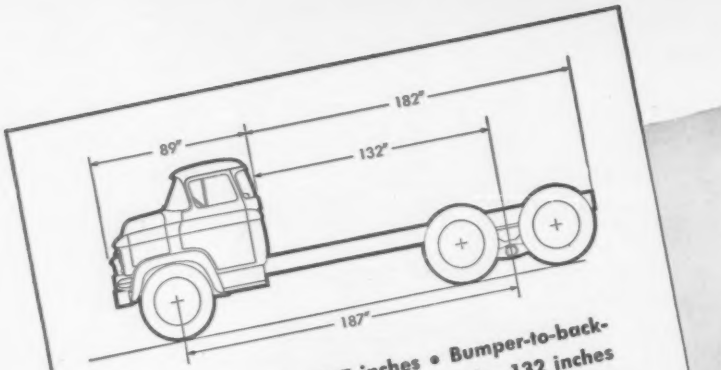
Send me the new Stran-Master Catalog. Please quote down payment needed for_____ x _____ Stran-Master building to be used primarily for:_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____



Wheelbase length—187 inches • Bumper-to-back-of-cab—89 inches • Cab to rear axle—132 inches Cab to end of frame—182 inches • Base chassis weight—11,087 pounds • Total loaded weight on front axle—14,200 pounds • Total loaded weight on rear axles—32,000 pounds

Now-haul 7 yards

in nearly all of the 48 States!

GMC's spanking-new FW556 is your truck! For no other regular, in-production model anywhere can haul 7 full yards at a clip—even in states with limitations as low as 46,400-lbs. gross

You see, this rig's all "muscle": with ⅜-inch heat-treated frame rails that eliminate the need for reinforcement—rubber "biscuit" mounting instead of steel springs—aluminum saddles and wheels.

The pay-off is a vehicle weight of only 11,087 pounds. Add 6,760 lbs. for a lightweight mixer, and you still have room for 28,350 lbs. of payload—all within a 46,200-lb. total.

ILLUSTRATED GMC FW556 MONEY-MAKER is just one of a complete line of GMC's *extra-stamina-engineered* for construction work. They're available with conventional, dual-purpose or c.o.e. cabs—gasoline or Diesel power—regular or Allison Torqmatic* transmissions.

**Optional at extra cost*

s of mix every trip

Power to haul these extra-size loads comes from GMC's 370-cubic-inch V8. It delivers 232 high-torque horsepower that takes on the toughest on-and-off-the-road work without breathing hard. And it turns the 7-yard barrel, too—through its front-end PTO.

But the real eye-opener is its price tag! For all these advantages are yours at a figure *hundreds of dollars* lower than anything else close to its class. Check that at your GMC dealer's!

GMC TRUCK & COACH—*A General Motors Division*

GMC-America's Ablest Trucks

Available in models from ½ to 45 tons

Aeration Permits Water Work at —30 F

Water work on a new four-lane highway bridge in one of Canada's leading summer resort areas was carried on all winter in sub-zero temperatures with the aid of an underwater aeration process to keep the working area free of ice. The process was adopted by Dravo of Canada Limited, Toronto, contractors on the substructure for a bridge on Ontario Highway 11 across Vernon Lake Narrows at Huntsville, 140 mi north of Toronto.

Despite temperatures as low as —30 F, the floating construction equipment was able to continue operating in a 200-ft-wide strip of open water across the 800-ft-wide channel.

Admittedly both the progress and the scope of the work were somewhat curtailed by the cold, but the contractor's engineers regard the aeration move as a substantial time saver. They point out that normally Vernon Narrows is ice-covered for a period of four months each year.

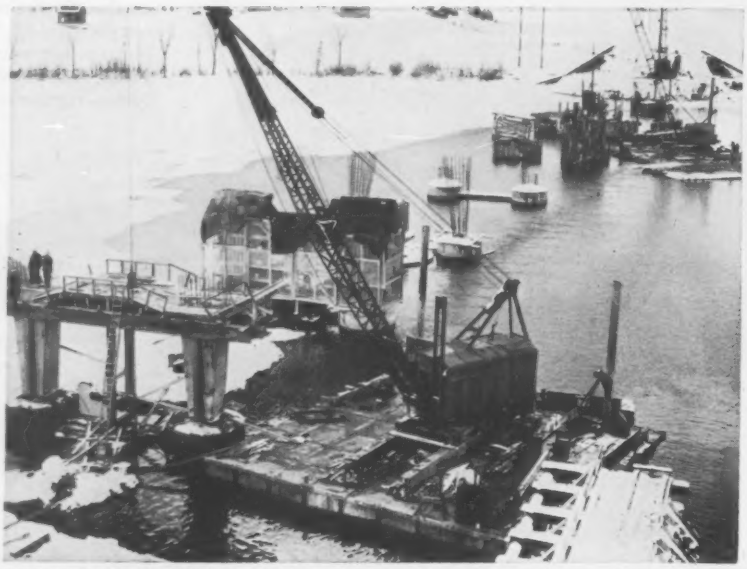
In the aeration process, compressed air is passed through holes in a plastic pipe laid across the floor of the channel. The air forces to the surface the warmer water at the bottom of the channel and this coupled with the resulting turbulence prevents ice from forming.

The plastic pipe, which was laid from the deck of a derrick boat, was 1½ in. in dia and had ⅛ in. dia holes at 10 ft intervals. It was kept submerged by concrete weights attached to it at 20 ft intervals. At its maximum depth, the pipe was 25 ft below the surface of the lake. Compressed air was supplied by a rotary compressor which is located on the shore.

The contractor is building eight concrete piers and two abutments for the 810 ft structure. The pier footings which are dumbbell shaped, consist of two 12-ft-dia reinforced concrete pile caps joined by an 18-ft-long, 4-ft-wide tie beam. Each of the pile caps is supported by either six or eight 18-in.-dia cast-in-place piles driven to rock as much as 80 ft below the surface of the water.

Two derrick boats, a barge and a ferry are being used on the project. Concrete is supplied by a one cu yd mixer on the shore, and is shifted by means of an air-powered transfer buggie to buckets on the ferry.

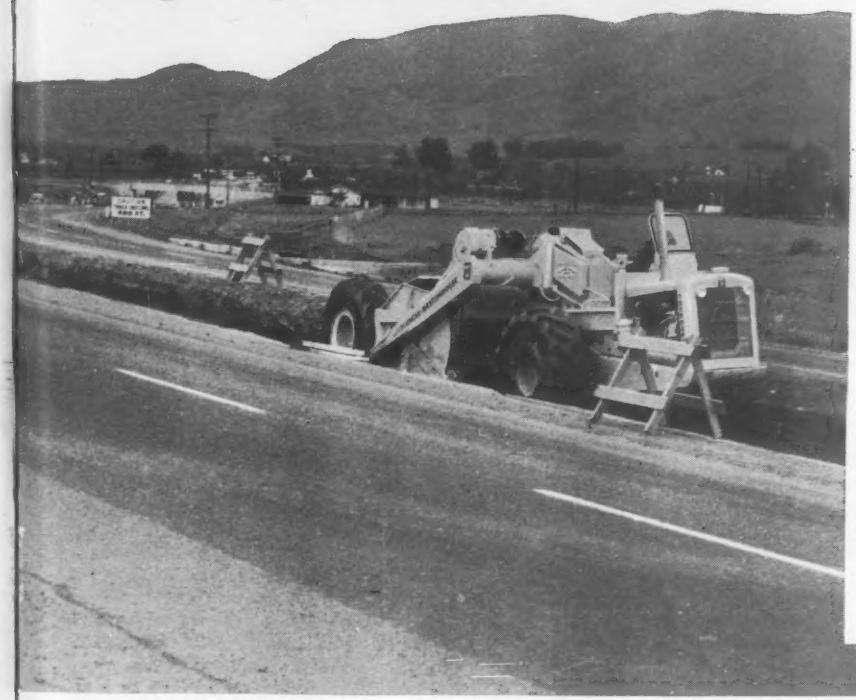
The substructure, which is to be completed this spring, is being done for the Ontario Department of Highways.



PIER CONSTRUCTION is carried on from barges working in the area kept free of ice even at —30 F by the underwater aeration process.

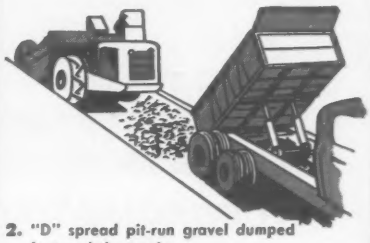
TURBULENCE on surface of water (arrow) is caused by compressed air coming through small holes in plastic pipe laid on lake bottom.

How California contractor built temporary high-speed traffic lanes

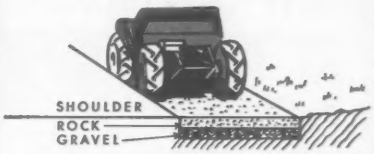


To shift traffic of the outside traffic lane, while repairing a long curve, Ball & Simpson Construction Co., Berkeley, California, built a temporary lane in the median strip of the busy 4-lane, Oakland - San Jose Freeway.

1. D Tournapull® cut flat trench 7' wide, adjacent to existing shoulder.



2. "D" spread pit-run gravel dumped in trench by trucks.



3. Tournapull loaded, hauled, and spread crushed rock over gravel, to prepare firm base for blacktop surfacing.

D 'Pulls* handle finish work, plus handyman dirtmoving

On the Oakland-San Jose Freeway (Hwy. 17) south of Hayward, California, Ball & Simpson Construction Co., Berkeley, handled 16 miles of road rebuilding and resurfacing. The job consisted of 2 segments. On the northern section of the job — known as Jackson Road Project — company's contract included dirtmoving, grading, concrete bridges, and all painting.

For sub-grade finish work on this north section highway, as well as on access roads, cloverleaf, etc., this contractor employed 1 of their 3 D Tournapulls. "D" cut high spots, filled the low to balance the final sub-grade and prepare for concrete paving. It also smooth-graded ditches, backfilled at bridges and overpasses, built-up and graded entrance roads and traffic interchanges.

Rents 4th 'Pull for southern section

On the Warm Spring Project — at the southern end of the 16-mile job — contractor rebuilt and blacktopped an existing 4-lane highway. Because the company's 2 other "D's" were busy on other work, Ball & Simpson rented a 4th D Tournapull for this section. It worked on odd-lot dirtmoving jobs similar to those illustrated at top of page.

Ball & Simpson also has three interchangeable 11-ton LeTourneau-Westinghouse Rear-Dump trail-units for their Tournapull prime-movers. These extra work-units keep contractor's prime-mover investment working full-time . . . come in handy for hauling shovel-loaded dirt in muddy, rutted or other difficult off-road conditions frequently encountered in their area.

Likes short-radius turnability

Says L. D. Mosier, company official, "We use 'D' scrapers for finish work because they're the *only* machine that can cut dirt on the short radiuses we encounter on these jobs." Supt. A. D. Ostrum reports, "We have a lot of subgrading and finishing work. Tournapull does an excellent job on these operations." "I'm sold," says operator Lew Jones. "On clean-up work, it's the best outfit I've ever run."

For profitable small-yardage and work-and-run type dirtmoving . . . for handyman clean-up, finish grading, and pioneering . . . you can't beat 29.5 mph, roadable, 9-yd. D Tournapulls. Find out how "D's" can cut costs on your jobs. Call or write for complete details and a demonstration.

*Trademark DP-1552-DCJ-1

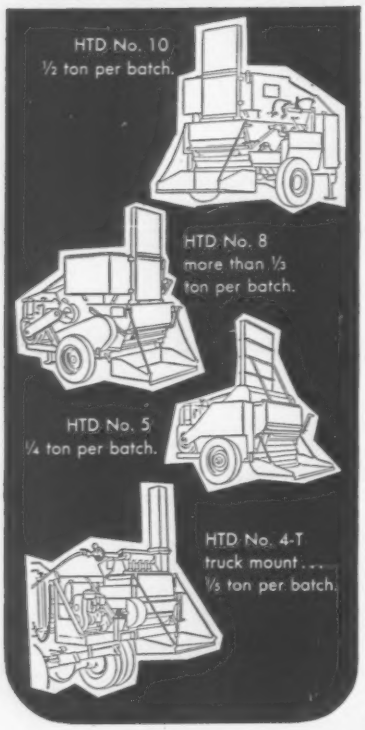
LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

FOR LOW-COST
HOT OR COLD
PAVING OR PATCHING
IN ANY SEASON

McConnaughay
ASPHALT MIXERS



For details and specifications write...

McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co.
3314 Cherry Lane, Fort Wayne, Indiana

International

France Builds Biggest Sphere for A-Power

A giant 180 ft dia sphere to house an atomic power reactor is under construction in the Loire Valley near Chinon, France.

The electric power plant structure for the Electricite De France is being erected with no steel members on the inside or columns on the outside. It is probably the largest self supporting sphere ever built, and is third largest sphere regardless of method of support.

The lower portion of the sphere is embedded in a concrete base, in such a manner as to eliminate bending moments due to the embedding in concrete and temperature changes.

Cold rolled steel plates of thicknesses varying from $\frac{3}{8}$ in. at the top and $1\frac{3}{16}$ in. at the bottom make up the shell. The plates are $11\frac{1}{2}$ ft wide and 30 ft long. The steel is rolled, using a new process that allows the use of large size plates. This reduces weld lengths, which in turn inhibits changes in the quality of the steel which has good impact resistance at low temperatures.

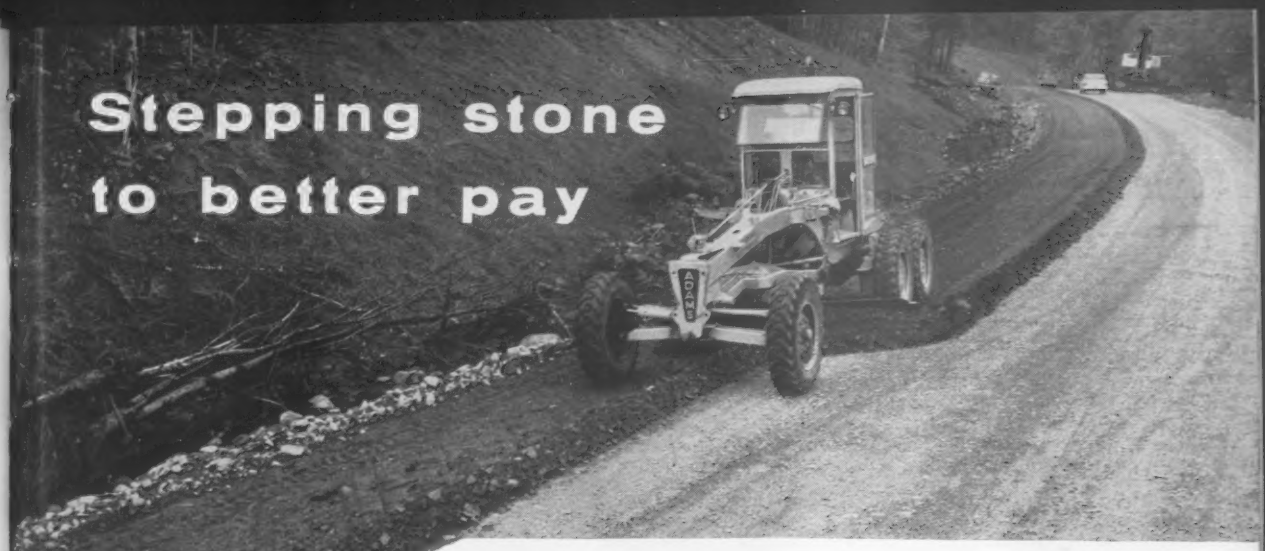
Plates are pre-assembled in panels of three, and automatically welded. In place welds are made with low hydrogen electrodes and checked with X-ray.

The design, fabrication and erection is being done by Compagnie Francaise D'Entreprises, Anciens Ets, Leon Dubois E.M.C., Paris.

German Tunnel Was an Air-Raid Shelter

Germany's longest vehicle tunnel, opened to traffic recently, started in 1941 as a giant air-raid shelter for the city of Stuttgart. After the war, the city council decided to extend one of two bores. It spent $3 million between 1949 and 1958 to make a 3,000 ft long, 25 ft wide, two-lane tube cutting through a hill in the city.

(*International cont.* p. 56)



Stepping stone to better pay

60 hp grader helps Vermont contractor get started . . . will be profitable partner to bigger graders

Baslow Construction Co., Ira, Vermont, was just getting started as a roadbuilding contractor. The company needed a grader . . . wanted an inexpensive, yet powerful and serviceable machine, for road rebuilding and surfacing.

With an eye to both present and future earning power, Ralph Baslow picked a 60 hp Adams* Model 220. He recognized that this 15,000-lb. grader could not do heavy work as fast as a higher-powered machine. But he also knew that it would handle most light grading and finishing at even lower cost than a heavier grader.

Regrades and surfaces old dirt road

Contractor's "220" handled *all* blade-work on grading and blacktopping a section of Route 73, between Forest Dale and Rochester, Vt. This State Highway Department project involved moving 35,000 cu. yds. of dirt and 8,500 yds. of rock, by truck-and-shovel excavation. After subgrade was prepared, a gravelly base (some stones to 12" dia.) was laid, and penetration oil seal applied. Then 6" of crushed rock was spread, as base for the blacktop coat.

Baslow Construction Co., Ira, Vermont, enlarged its scope of roadbuilding operations, yet kept equipment investment low . . . selected an Adams 220 for its first grader. The 60 hp Adams handled all grader work on a section of grading and blacktopping of Route 73, between Forest Dale and Rochester, Vermont.

"For its size, you can't beat '220' "

Operator Ernest Lowell reports, "We've done everything on this job with one '220'. We brought the subgrade up, did ditching with it . . . all the grader work. And last winter, we kept the job clear of snow. I've been working this Adams ever since we got it. It's a nice-handling machine, easy to operate . . . really is first rate with me."

Owner Ralph Baslow says, "This Adams does very good work for us . . . we couldn't expect any more. Of course, you can't compare it with a grader in the heavy-duty class; but for its size, you can't beat '220'. We run it between jobs quite a bit. Got a job down at Rutland waiting for us . . . that's 22 miles. It's a school yard to be blacktopped. For those small jobs that are scattered all over, this Adams is perfect!"

15,000-lb. grader makes bigger machines more profitable

Purchase of his "220" was a money-saving compromise that will prove even more profitable when Baslow acquires another, bigger, grader. Then he can use his heavier machine on tougher work . . . keep his 60 hp "220" busy on lighter tasks. In that way, both graders can always work at, or near, maximum output . . . both machines earning "top dollar" for every hour's work.

You'll find Adams 220 grader is a money-making addition to any size fleet. Call or write us for details.

*Trademark G-1664-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Breezy Point Surf Club, Rockaway Point, New York is framed by five glulam rigid frames of 53'-6" span, spaced at 17 feet. Roof slope is 2:12. Design by Adams and Woodbridge, architects, New York City.

Low Pitched Roof and Maximum Clearance

with glulam *rigid frames* by Timber Structures, Inc.

Low pitched roof lines... unimpaired interior clearances ...minimum wall height... no wasted overhead space... fast jobsite assembly and erection — these are some of the design and economy advantages of Timber Structures' rigid frames.

This versatile structural unit has separate arm and leg members, precision fabricated of dimensionally stable glulam timbers and joined at the haunch by a patented connection. The same results are accomplished as with the three-hinged Tudor or "boomerang" arch, but without the radius at the haunch. In addition, shipping is greatly simplified, and wide span post-free framing is thus made completely practical for every section of the country.

For details of spans and loadings, see your nearest representative of Timber Structures, Inc., or write for the illustrated brochure — "Buildings for Tomorrow".

TIMBER STRUCTURES, INC.

P.O. BOX 3782-C, PORTLAND 8, OREGON

Offices in Ramsey, N. J.; New York City; Boston; Philadelphia; West Hartford; Cleveland; Charlotte; Chicago; Centerline, Mich.; Kansas City; St. Louis; Minneapolis; Des Moines; Wichita; Memphis; Dallas; Houston; Birmingham; Beverly Hills, Calif.; Seattle; Spokane; Denver.

Local Representatives throughout the United States and Canada.

TIMBER STRUCTURES, INC. OF CALIFORNIA

Richmond • Sacramento

SEE OUR CATALOG IN SWEET'S INDUSTRIAL CONSTRUCTION FILE OR WRITE FOR COPY

. . . International

Work Starts on Iraq's By Subdividing Original Site

American Transportation Consultants, Inc., is now drawing up plans, specifications and contracts for a new standard gauge railway between the Iraqi capital of Baghdad and Basrah, Iraq's Persian Gulf port.

The new 340 mile line, via Kut and Nasiriya, will replace the present meter gage line via Hilla and Nasiriya. It is expected to cost $70 million and take four years to build.

At present, standard gage track extends from Mosul in the north to Baghdad, and all shipments between Mosul and Basrah and other southern Iraqi towns must be reloaded into meter gage wagons in Baghdad.

A five-man American team, headed by Gen. Lacey V. Murrow, President of American Transportation Consultants, is working with the Iraqi State Railways administration. The team, provided by the U.S., also will help supervise construction. Technicians will set up a construction and maintenance department to service the line and train Iraqi personnel.

The Iraqi State Railways has completed a route survey. Bids covering the line, diesel locomotives, radio communications, railway stations, bridges, coaches and wagons will be called later this year. The only big bridge on the line will be over the Euphrates River near Nasiriya.

Alcoa Plans Smelter And Hydro in Suriname

Aluminum Co. of America has signed a final agreement with the government of Suriname (formerly Dutch Guiana) to proceed with a joint multi-million-dollar hydroelectric project there.

Called the "Brokopondo Development," the plan provides for the construction of a dam, powerhouse, and transmission line to supply 150,000 kw. Suriname's legislative body has approved the agreement, which calls for Alcoa to build and operate the power facilities for 75 years. Thereafter, the hydroelectric works will belong to Suriname.

The proposed project site is a sparsely inhabited jungle area approximately 80 miles south of Paramaribo on the Suriname River. Work is expected to be completed by 1965.

Alcoa also will build a 60,000 ton aluminum smelter costing $150 million near the bauxite mining center at Paranam, to be ready to produce when power is expected to be available.

Alcoa has conducted bauxite mining operations through a subsidiary Suri-

Maintenance of Rio Grande flood control system

C Fullpak with 18-yd. capacity loads an average 15 yds. of sand, silt, and gravel in dry channel of the Rio Grande for International Boundary & Water Commission. 4 L-W earthmovers and other machines maintain an 86-mi. section.

At Fort Hancock, Texas, about 50 mi. southeast of El Paso, an operation and maintenance division of the International Boundary & Water Commission maintains 35 of the 86 mi. of the vital Rio Grande flood control system, between El Paso and Quitman Canyon.

The commission is a joint agency of the U.S. and Mexican governments and uses its own construction equipment in the never-ending job of channel and levee maintenance.

Clear channel

In this region, flash floods from large arroyos entering the Rio Grande deposit alluvium in the channel and on the floodway. At times, this completely plugs the river channel over long reaches. Due to the absence of river current to carry the material on through, the silt must be removed as quickly as possible. The channel and floodway must be restored to their designed capacity, to keep the flood control system in operation.

The Fort Hancock division uses 4 LeTourneau-Westinghouse units for the task — 1 C Tournapull® with 18-yd. Fullpak* scraper, 1 C Tournapull with earlier 16-yd. scraper, and 1 C Tournatractor®, with a 12-yd. scraper.

The traction, speed, and work capacity of I. B. & W. C.'s dirtmoving fleet pay off on this work. Job Superintendent R. F. White estimated the following average loads for the 3 scrapers, on a typical cycle: 15 yds. for the Fullpak, 13 yds. for the older C 'Pull, and 9 yds. for the Tournatractor-towed scraper. Material worked on this job is a mixture of silt, sand, and gravel.

"Move lots of dirt fast"

"In this maintenance program," said Project Superintendent A. F. Bettle, "use of Tournapulls has reduced our costs considerably. They're well suited to our type of earthmoving, and they're especially useful on long hauls." He added, "I can work these 'Pulls in soft sand. They get around rapidly, and move lots of dirt fast. And they also maintain their own haul roads."

"Roads fast to scattered jobs"

Job Superintendent White likes the versatility of the Commission's Tournatractor, too. "It roads fast," he asserted, "works easy in sand and silt."

Get further details on the low-cost production advantages of LeTourneau-Westinghouse equipment. Ask for specifications and owner-verified reports on performance.

*Trademark CPCT-1327-DC-1

Versatile Tournatractor dozes loads up to 3 tons in weight, also tows 12-yd. scraper.

Excavating in dry river bed of the Rio Grande, I. B. & W. C.'s Tournatractor operates early-model L-W scraper, hauls 9-yd. payload.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

THE NEW BARCO VIBRA-TAMP*

* Companion Tool to the Barco Rammer, Famous for Deep, Penetrating Soil Compaction!

A Versatile Tool for MAXIMUM COMPACTION of

1. Granular Base Materials

2. Bituminous Surfacing

EFFICIENT—one man does the work of many with VIBRA-TAMP. Operates in any weather. Works flush against curbs, foundations, and walls.

ECONOMICAL—to buy, operate, and maintain! No special tools required. Saves your bigger, costlier equipment. Tamp up to 750 sq. yds. per hour.

SAFE—moving parts fully enclosed. Special vibration dampers reduce operator fatigue. Simple controls. Handle adjustable to comfortable height.

DURABLE—simple design and quality construction keep VIBRA-TAMP on the job day in and day out. Carburetor unaffected by vibration.

VERSATILE—use VIBRA-TAMP for all kinds of work—wherever low cost is a prime consideration. Take VIBRA-TAMP on the big jobs for hard-to-reach areas. Use it for patching streets, driveways, and roads. VIBRA-TAMP has no economy equal—a real work-horse on sand, gravel, soil, chippings! *Ask for new catalog No. 630.*

Worldwide Sales and Service

BARCO *Serving Industry Since 1908*
MANUFACTURING COMPANY, 514-E Hough St., Barrington, Ill.

. . . International

naamsche Bauxite Maatschappij. The concern's name now will be changed to Suriname Aluminum Co., and as Suralco, it will direct all Alcoa activities in that country involving power development, exploration, mining, and aluminum smelting.

Japan Structures Finished After Decades of Building

During the year just ended, the Tokyo Metropolitan Government in Japan completed two notable structures—one culminating 20 years of effort, the other 10 years.

Ranking among the 10 highest completed dams in the world is 490 ft high Ogochi Dam on the Tama River at the western extremity of Tokyo. In Japan, it yields in height only to Sakuma Dam on the Tenyru River, completed in 1956.

Ogochi Dam is further distinguished by having as its main objective the storage of raw water for Tokyo's municipal supply. It is the world's highest dam developed primarily for water supply. However, it also will serve for flood control and for power generation (19,000 kw now under construction, total of 41,000 kw planned). Reservoir capacity is 155,000 acre-ft. Construction cost was $33 million.

In the eastern part of Tokyo, adjacent to the sea, the problem is too much water. To protect Tokyo's industrial lowlands, 65 miles of sea walls finally were completed in 1957.

Without protective walls, the area is susceptible to tidal waves and storms, such as occurred in 1947 and 1949, with heavy losses to the resident factories.

The walls facing the sea are 16½ to 20 ft high, while those abutting canals are 12 to 13 ft.

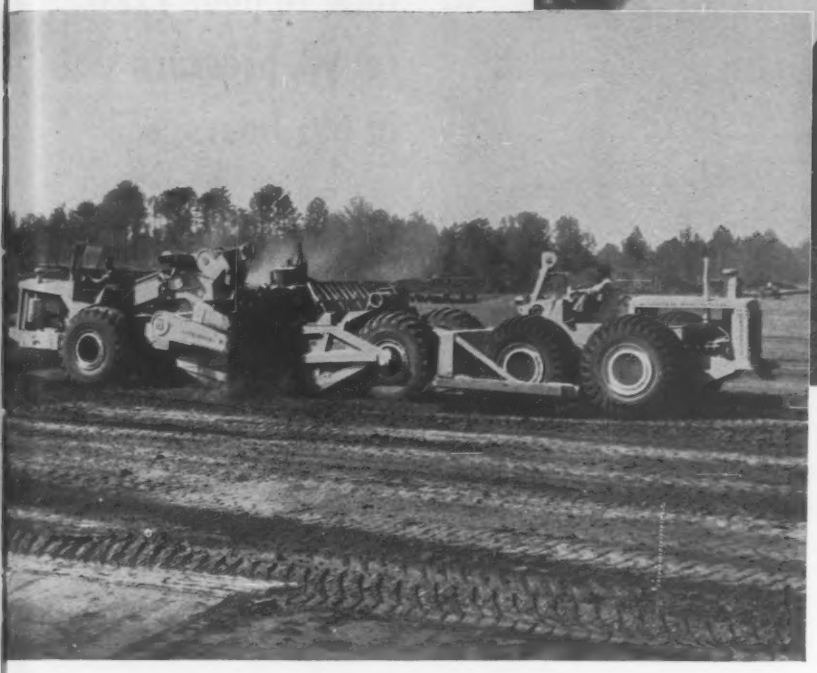
Under a new six-year plan, an additional 10 miles of embankment has been started. For this purpose $19 million will be expended this fiscal year.

World Bank Loan to Aid Japanese Steel Expansion

The World Bank has loaned Kawasaki Steel Corp. $8 million for expansion and improvement of its plant at Chiba, near Tokyo. Capacity is being raised from 324,000 to 684,000 tons of pig iron a year.

New construction to be aided consists of a second blast furnace of 1,000 ton/day capacity, a battery of 60 coke ovens and related facilities. Total cost of construction is estimated to be $20 million. Completion of these additions is expected by the end of 1958 or early in 1959.

"No matter what you want in a tractor . . . speed, power, maneuverability . . . Tournatractor's got it all!" says B & B Construction Co., Supt. Jim Vaughn. Firm replaced 4 crawlers with 2 Tournatractors, has boosted total production while cutting maintenance costs.



C Tournapull with 18-yd. Fullpak scraper barrels along haul road on leveling job near Sandersville, Ga. Machine's ability to travel 29.9 mph helped B & B average 17 mph for complete load-haul-spread-return cycles.

How B & B Construction Co. licked high tractor repair bills

B & B Construction Co., Irwinton, Ga., studied its tractor maintenance costs last year, and decided to do something about them. Repair bills on the firm's 5 crawlers had totaled approximately $30,000 in 1 year's operation in sand, clay and water. According to owner A. S. Boone, "That was *too* much!"

The firm was familiar with the low upkeep of LeTourneau-Westinghouse equipment. Its 2 Model D Tournapull® scrapers, with a total of 5,000 hours, had cost only $450 to service . . . so it bought 2 rubber-tired Tournatractors®. "That decision *really* saved us money!" Boone says today. Here's how the change of equipment paid off:

2 tractors replace 4 . . . yet increase production

The 2 Tournatractors replaced 4 crawlers — yet are actually *increasing* production. Boone says: "We can do 2 to 3 times as much work with Tournatractor." Superintendent Jim Vaughn agrees, adds: "It can push two scrapers in the same time a crawler is pushing one."

Downtime cut by ⅔

Tournatractor downtime has been only 10 days in a year . . . compared to 30 a year per crawler. Boone also says Tournatractor lube time is only 5 minutes, far less than a crawler.

As a "clincher", B & B records show this fact: at the same time it bought its 2 Tournatractors, the firm purchased 4 LeTourneau-Westinghouse C Tournapulls with 18-yd. Fullpak* scrapers and one new crawler tractor. *The maintenance cost of all 6 L-W machines combined has been approximately $4500.00, that of the one crawler approximately $2200.00.*

Look closely at *your* maintenance costs, then study Tournatractor. Write for full details, and ask for a working demonstration.

B & B rubber-tired units complete 2½-mile cycles in less than 10 minutes

B & B recently leveled a building site and did road construction for American Industrial Clays, Inc., near Sandersville, Ga. For this 220,000-cu. yd. project, the firm brought in a Tournatractor, 2 C Fullpaks, and another L-W product, an Adams* 512 motor grader.

Tournatractor push-loaded the Fullpaks to 13 and 14-yd. payloads of sandy clay in 38 sec. over 90'. Material was then hauled over 1¼ mi. to fill a slough pit. The haul road included steep grades and sharp turns, but was kept in good shape by the Adams. The 13,960' cycles were completed in an average of 9.42 min. each. That's a speed, for the entire load-haul-spread-and-return cycles of 17 mph.

Beats production of neighboring contractor 5-to-1

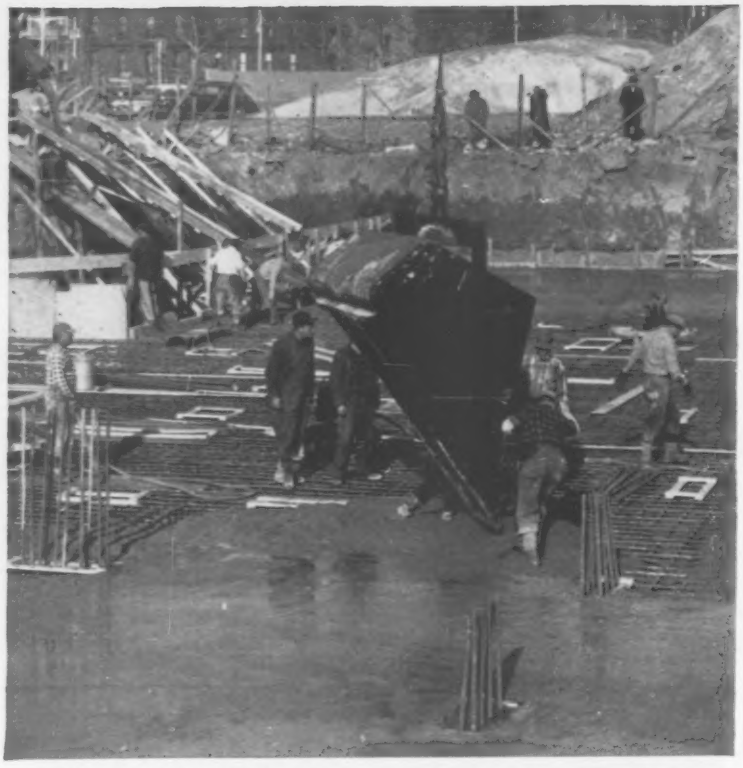
Fast production times are no novelty to B & B since it acquired its new L-W machines. On a previous job, the firm moved 128,445 cu. yds. in 5 weeks . . . after a nearby contractor had been able to move only 30,000 yds. in 6 weeks on the same type of job.

*Trademark CTCP-1574-DCJ-1

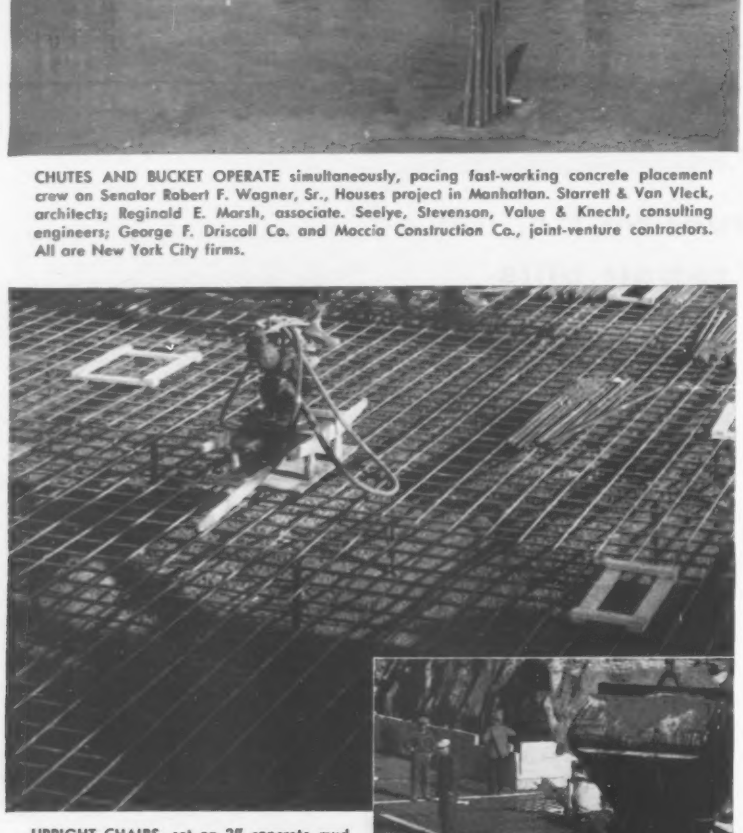
LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



CHUTES AND BUCKET OPERATE simultaneously, pacing fast-working concrete placement crew on Senator Robert F. Wagner, Sr., Houses project in Manhattan. Starrett & Van Vleck, architects; Reginald E. Marsh, associate. Seelye, Stevenson, Value & Knecht, consulting engineers; George F. Driscoll Co. and Moccia Construction Co., joint-venture contractors. All are New York City firms.



UPRIGHT CHAIRS, set on 3" concrete mud mat, support top reinforcing for pressure slab. Placed on 6' centers, vertical chairs were held securely in place against bottom reinforcing by tie-wires.

BUCKET is brought close to reinforcing steel before discharge to reduce impact. Wood templates locate column dowels.

How to pour 1526 cu. yd. pressure slab in 6½ hours

HERE'S HOW one shift poured a 5' thick, 8,200 sq. ft. concrete pressure slab, and went home 90 minutes early.

Problem of Manhattan traffic was solved by scheduling pour on a Saturday which also assured contractor of getting concrete supplier's entire output. Casting began at 7:00 a.m. at two diagonally opposite corners of the "T"-shaped 64' x144' foundation where two batteries of 4 wood chutes permitted several truck mixers to unload simultaneously at each location. Two cranes with 2½ yd. lay-down buckets were spotted on corners opposite the chutes to handle additional transit-mix trucks. By late morning, work had progressed beyond reach of the chutes. The cranes continued closing in on the middle. They completed the 1526 cu. yd. pour at 1:30 p.m.—just 6½ hours after the first truck mixer unloaded.

The 30-man crew placed concrete at a fast 235 cu. yds. per hour clip with evenly paced delivery of properly mixed material by a fleet of 24 truck mixers. The only way to handle a big, continuous pour of this nature is to use truck mixers of certified design, capacity, mixing speed and water control accuracy.

9 CUBIC YARD
MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
12 CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE
N.R.M.C.A. REGISTRY NO.

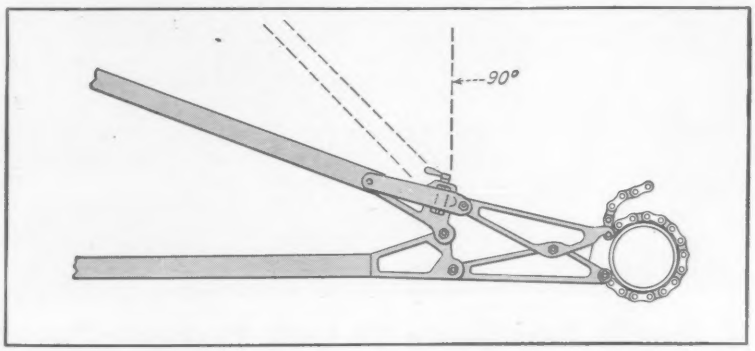
You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
Mattoon, Ill.
CHAIN BELT COMPANY
Milwaukee, Wis.
CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
CONSTRUCTION MACHINERY CO.
Waterloo, Iowa
THE JAEGER MACHINE COMPANY
Columbus, Ohio
THE T. L. SMITH COMPANY
Milwaukee, Wis.
WESTINGHOUSE TRANSIT MIXER DIV.
Indianapolis, Ind.
WHITEMAN MANUFACTURING CO.
Pacoima, Calif.
WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.

Changing Oversized Tires Made Easy

A specially-designed power loader has been developed for use by contractors to maneuver heavy off-the-road machinery tires for repair.

A hydraulic jig on the 4,000 lb capacity power loader provides versatility of lifting movement and may be used to nudge huge tires on or off the rims. The hydraulically operated loader is powered by an auxiliary four-cylinder converted jeep engine, two cylinders of which provide the crane's hydraulic power and two are adapted to act as an air compressor to operate air-powered tools. Tools can include 50 and 30 ton jacks to lift equipment, an air impact wrench, a tool to break bead on tires and an inflating attachment. Daybrook Hydraulic Div., Young Spring & Wire Corp., Bowling Green, Ohio.



New Pipe Cutter Requires No Vise, No Turning

A new cutter that will cut transite pipe, concrete pipe, flue lining and up to 6 in. cast iron soil pipe, has been announced. With the Wheeler Cutter it is said a clean, even cut can be made in 20 sec and if required, slices as small as one inch can be made.

A chain houses the cutting edge, consisting of hardened steel wedge-shaped discs spaced about 1¼ in. apart. With the chain in place, applying a steady pressure on the handles causes the discs to penetrate the outer surface of the pipe and forces the pipe to break evenly at the point of penetration. List prices range from $69.50 to $110.00. The Wheeler Mfg. Corp., 508 W. 48 St., Ashtabula, Ohio.

Electric Radiant Heating Used in Curtain Wall Panels

A combined curtain-wall panel and electric radiant-heating unit for office buildings, apartment houses, hotels, schools and other structures is now available. A facade of these panels saves at least 25% in the initial cost of building compared with conventional construction, according to the manufacturer. Radiant-heat curtain-wall panels eliminate the need for furnaces, boilers, pumps, and piping, and increase usable space.

A typical panel is a sandwich 2⅛ in. thick, consisting of two porcelain-enameled steel panels with a vermiculite-filled asbestos honeycomb core. The exposed face of the interior panel has a ceramic coating of high acid resistance and high dielectric strength, onto which an aluminum-alloy heating element is sealed with silicone.

An aluminized steel sheet within the panel reflects the heat rays from the heating element, minimizing heat loss.

Heat rays are directed from the panel over a 160 F range and reflected from the room surfaces to heat the room.

Other advantages claimed by the manufacturer are lack of drafts, humidity of 30 to 40%, cleanliness and uniform heat throughout the room. The Bettinger Corporation, Waltham, Mass.

Electro-Mechanical Drive Provides Power for Crusher

Power development for crushing plants by an electrical and mechanical drive unit combines the portability of mechanical drive and the flexibility of electricity, say the manufacturers of the Caterpillar D337 (Series F).

The unit provides simultaneous mechanical drive for primary and secondary crushers, as well as electricity for conveyor and screen operation. The drive unit takes power from both ends of the diesel engine's crankshaft allowing either crushers or conveyors to run without the others.

The units are designed for crushing plants producing 150 to 200 tons per hour with a 25% oversize factor. Specifications for the drive unit are: length, 136½ in.; width, 45 in.; and height about 80 in. Caterpillar Tractor Co., Peoria, Ill.

(*New Products cont. p. 62*)

BUILD
BRIGHT COLORS
RIGHT INTO
CONCRETE
FLOORS...

And get greater hardness at low cost . . . easily!

TRUSCON
ART-ROC
AGGREGATE

Ready to use . . .
No pre-mixing with cement

Not a paint . . . ART-ROC troweled into the cement surface holds attractive colors safe from attack by cleansers, alkalis or rust. Provides a tough extra-hard surface at no extra cost . . . both for interior and exterior installations. Floors or pavements with ART-ROC are bright and attractive . . . easy to clean, economical to keep up.

Colors . . . Hardens . . . Beautifies . . . Dustproofs!

Just sprinkle on the leveled and floated fresh concrete surface, then work into the surface with a wood float and finish with a steel trowel. You'll be amazed at the brilliance and depth of the two beautiful colors: Tile Red and Spanish Green.

Remember . . . ART-ROC is not just a surface film, but color that's built-in to stay . . and it's so easy to use!

- Terraces
- Porches
- Walks
- Tennis Courts
- Salesrooms
- Recreation Rooms
- Restaurants
- Factories
- Swimming Pools
- Driveways
- Laundries
- Garages

TRUSCON
Laboratories
Division of Devoe & Raynolds Co., Inc.

Truscon Laboratories, Dept. E
Box 69, Milwaukee Junction P.O.
Detroit E-57, Mich.

Please send me detailed information about ART-ROC.

NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Tractor-Ripper Designed for Pipeline Work

A new model of tractor-mounted rock rippers is now in production for use in ripping ahead of pipeline trenches.

The hydraulically operated heavy-duty tool beam carries a single ripper shank in a swing bracket. The shank thus can trail the tractor for easy steering, even when ripping at maximum depth.

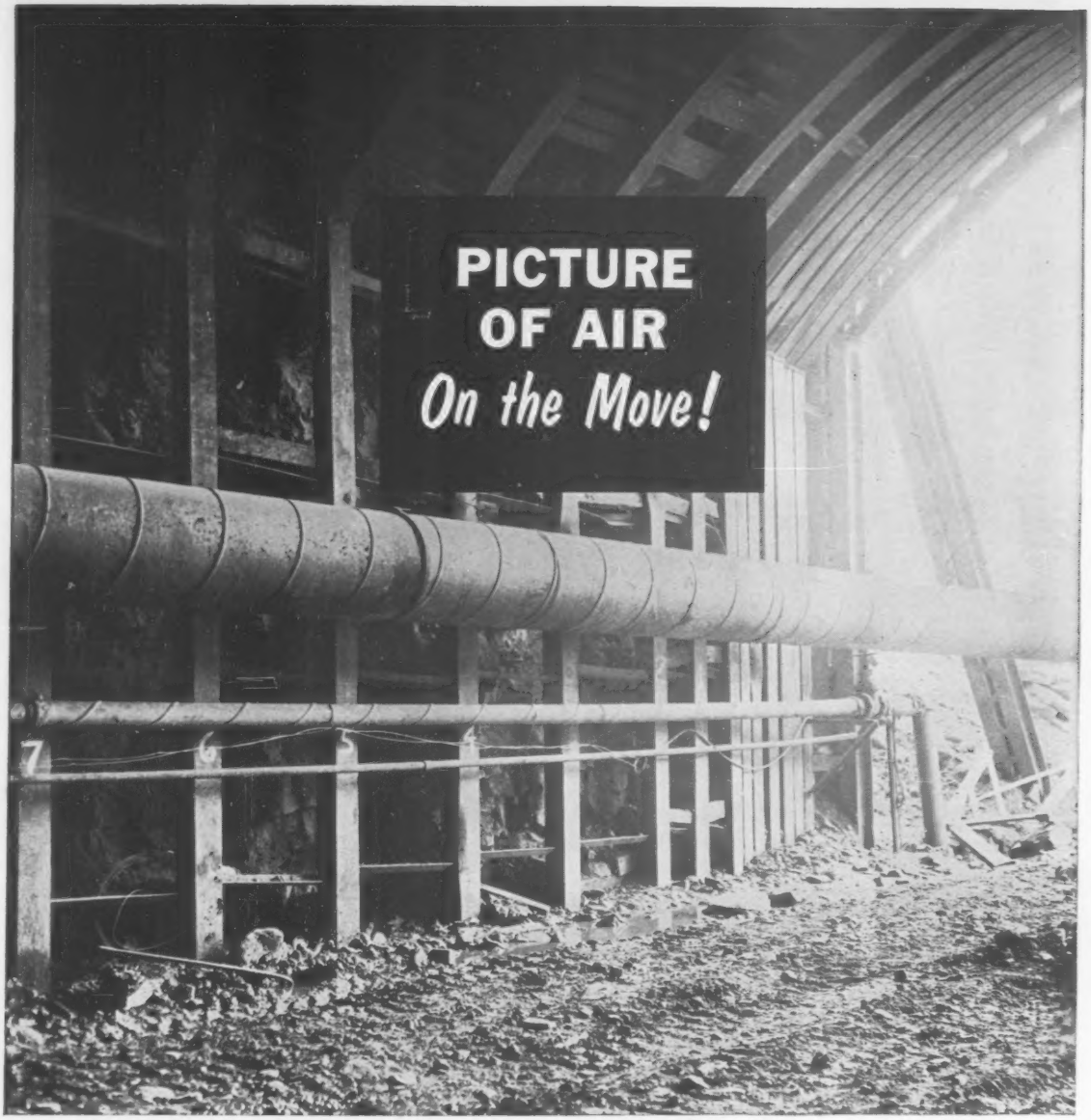
The pipeliner rippers are available in two styles: as an attachment for present rock rippers, or as a complete assembly. The attachment unit will take 24 or 48 in. shanks, straight or curved; the complete unit will take shanks up to 72 in. in ripping depth, and is equipped with pusher plates for tandem operation with a booster tractor. American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.

Hydraulic Ram Has a 22 Inch Travel

A new 100 ton hydraulic ram has been added to the Simplex "Re-Mo-Trol" line of hydraulic center hole pullers. The Model RC-1122 ram with 100 ton capacity has 22 in. of travel, and is said to be particularly adaptable to such jobs as applying tension in prestressing concrete, extensive lifting or horizontal pushing jobs.

The ram provides a maximum power for such standard industrial operations as removal and replacement of long cylinder liners, positioning steel or concrete beams and large diameter pipe, or acting as a power unit for a large hydraulic press.

The machine can be operated by hand or power pump adjacent to the work or at a remote point. Templeton, Kenly & Co., Broadview, Ill.



Lines of NAYLOR Spiralweld pipe provide a dependable way to move air. Getting rid of smokes, fumes and dusts; supplying fresh air for underground construction; or bringing in compressed air for operating tools, you can rely on this distinctive pipe to do the job.

NAYLOR pipe is light in weight, easier and more economical to handle and install—particularly with the one-piece NAYLOR Wedgelock coupling to speed connections. The spiral-lock-seam structure assures greater collapse strength and safety, making possible the use of lighter gauge material for economy in push-pull ventilating service.

Specify NAYLOR for air, water, ventilating, drainage, dredging and other lines to get this extra performance.

Write for Bulletins 507 and 513 for complete details.

NAYLOR

NAYLOR PIPE COMPANY

1248 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office 60 East 42nd Street, New York 17, N. Y.

One of the eight Mack four-wheel dumpers with 22½ ton capacity operated by Goodfellow Bros., Inc., of Wenatchee, Washington. The Macks have proved so valuable that Goodfellow Bros. have four more on order. These heavy-duty haulers are taking on a . . .

punishing road job in S

Even in temperatures ranging from —15° to 110°, through mud, extreme dust, snow and ice, and on grades of up to 23%—Goodfellow Bros. know that their Macks will perform efficiently, dependably . . . and profitably.

Under such grueling operating conditions, their Mack dumpers showed their capability on the 3,000,000-yard Rocky Reach Dam earth-moving project on the Columbia River. Then they double-proved it on the Snoqualmie Pass highway construction in Washington's rough mountain country.

Besides providing maximum payloads at minimum hauling costs, the Macks are particularly well accepted by Goodfellow Bros. drivers and shop personnel because of their handling ease, short turning radius and easy accessibility for servicing.

T
that
unit
the-
ditio
Mac
Can

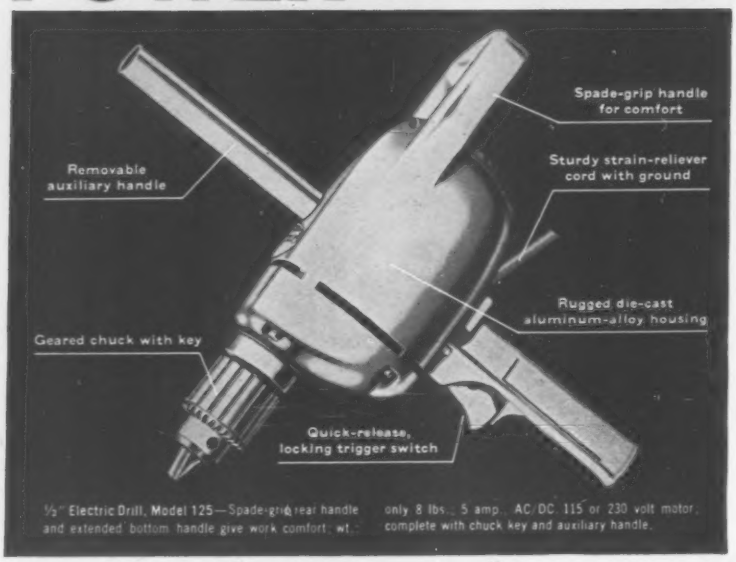
Dumping rock on a road-widening operation on Highway #10 in Washington's Cascade Mountains. Prior to this road job, Goodfellow's 22½ ton Macks were used in the 3,000,000 yd. excavation and backfill for the Rocky Reach Dam near Wenatchee, Washington.

Snoqualmie Pass

There is a Mack tailored to your construction needs that will provide large-capacity payloads at minimum unit cost. Let your Mack representative show you on-the-job performance proof that—under today's conditions—you can't afford *not* to operate Macks! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

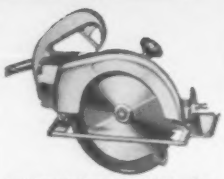
MACK
first name for
TRUCKS

POWER to boost job efficiency with REMINGTON tools


Spade-grip handle for comfort
Removable auxiliary handle
Sturdy strain-reliever cord with ground
Rugged die-cast aluminum-alloy housing
Geared chuck with key
Quick-release, locking trigger switch

½" Electric Drill, Model 125—Spade-grip rear handle and extended bottom handle give work comfort; wt., only 8 lbs.; 5 amp., AC/DC 115 or 230 volt motor; complete with chuck key and auxiliary handle.

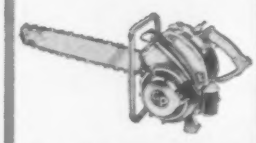
Power Trowel, Model TG4-2G—2½-hp. 4-cycle, gasoline-powered engine; 26"ring size; automatic recoil starter; centrifugal clutch disengages at idle.



10" Electric Saw, Model 106—Rugged 13-amp, 115 or 230-volt AC/DC motor; cuts full 3⅜". Complete with blade, wrench and carrying case.

Concrete Vibrator, Model 7GV—A 5-hp. gasoline-powered unit from the industry's broadest line of air, electric and gasoline-driven models.

Powerful, rugged, easy to handle—Remington Power Tools help you boost output and ease the tough jobs. They're precision-built for long service and minimum maintenance. Your Remington distributor stocks and services the industry's widest selection of power tools and parts.



Golden "Logmaster" Chain Saw, 5-hp. Roller-Bearing nose boosts chain power up to 20%. Outcuts and outlasts other chain saws in its class.

Submersible Pump, Model PSP-602 with powerful air motor—completely submersible; pumps 14,000 gallons per hour against 10-ft. head.

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER TOOLS ARE AVAILABLE IN **AIR • ELECTRIC • GASOLINE-DRIVEN MODELS**

Remington

MALL TOOL COMPANY *Mall*

Division of Remington Arms Company, Inc., Bridgeport 2, Conn.
In Canada: Mall Tool, Ltd., 36 Queen Elizabeth Blvd., Toronto, Ontario

FREE CATALOG

Send for illustrated catalog showing complete line of Remington Contractor and Industrial Tools with specifications and performance data. Mail the coupon—there's no obligation.

ENR-3

Mall Tool Company
Division of Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send—without obligation—FREE catalog on Contractor & Industrial tools.

*Name*_____ *Position*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Specifications subject to change without notice.

Completion Dates

An owner's conduct may waive right to damages

If a contractor fails to complete his work within the time stipulated in the contract and the owner nevertheless permits him to proceed with the work, the owner may be deemed to have waived his right to damages for delay.

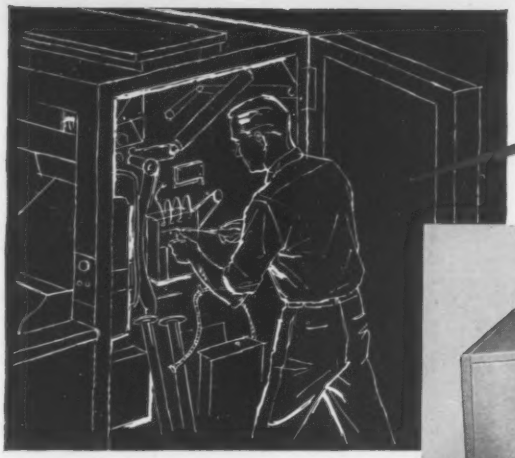
The issue was involved in a recent federal case won by the contractor.

In that case, Lippert Brothers, Inc., had signed a contract with Oklahoma City for construction of a grandstand on the municipal fairgrounds. Contract called for offices underneath the grandstand for occupancy by Oklahoma State Fair Exposition.

The Fair Exposition was not a party to the construction contract, but was anxious to occupy the offices while preparing for the oncoming fair. It accordingly entered into a letter agreement with Lippert, whereby Lippert agreed to accelerate the work on the office area to have it serviceably ready for occupancy on or about September 11. In consideration of the extra effort, the State Fair Exposition agreed to pay Lippert the sum of $5,000. The office area was not available for occupancy on September 11. Lippert continued with the work until about September 17 or 18, when the Fair Exposition moved in. When the Exposition refused to pay Lippert the agreed $5,000, Lippert brought an action to recover and obtained a judgment which was affirmed on appeal.[1]

In discussing the law, the appellate court said: "Under Oklahoma statutory law, time is never considered the essence of a contract unless expressly so provided. 15 O.S.A. Section 174. But no particular form of expression is required if it appears from the provisions in the contract that time should be of the essence. Mitchell v. Probst, 52 Okl. 10 10, 152, P. 597; Green Duck Co. v. Patterson & Hoffman, 36 Okl. 392, 128 P. 703; The Fair Exposition argues that time was made the essence of the contract by the specific agreement to make the offices serviceably available as quickly as possible, but not later 'than the above mentioned date,'

"The whole content of the contract does indicate that the parties intended that time should be the essence of the contract. Not being a party to the contract, the sole concern of the Fair Exposition was accelerated performance to enable it to occupy the offices on or



—upkeep?

or Keep Up!—

Model 35. Moderately priced machine for volume reproduction. Provides up to 30 f.p.m. speed and full 46-inch printing width.

WHY put up with upkeep, downtime, and aggravations of older reproduction equipment? You can *keep up* the efficiency of your drafting department—and be money ahead—by replacing older units with new, modern Copyflex machines.

Take a moment to compare the performance of your equipment with these modern reproduction advantages. Can you really afford *not* to keep up with Copyflex?

More Operator Conveniences. Modern Copyflex gives printing widths up to 54″ to simplify feeding of large tracings, facilitate multiple feedings. Extra-large delivery trays, automatic separation, automatic stacking, and front-or-rear delivery further speed operator's work.

Faster Mechanical Speeds. New models offer sharply increased speeds—up to 30% faster than before. Synchronized exposure and development assure top quality prints, one knob control simplifies operation.

Sharp, Uniform Prints. Developing solution is applied directly to exposed print assuring complete, positive development at all speeds and on all types of materials.

Problem-Free Installation and Operation. Clean, quiet, odorless . . . Copyflex requires no vents or plumbing, needs only an electrical connection for operation.

BRUNING Copyflex

Send for Your Free Copy!

Charles Bruning Company, Inc., Dept. 43-M
1800 Central Road, Mount Prospect, Ill.
Offices in Principal U. S. Cities
In Canada: 105 Church Street, Toronto 1, Ont.

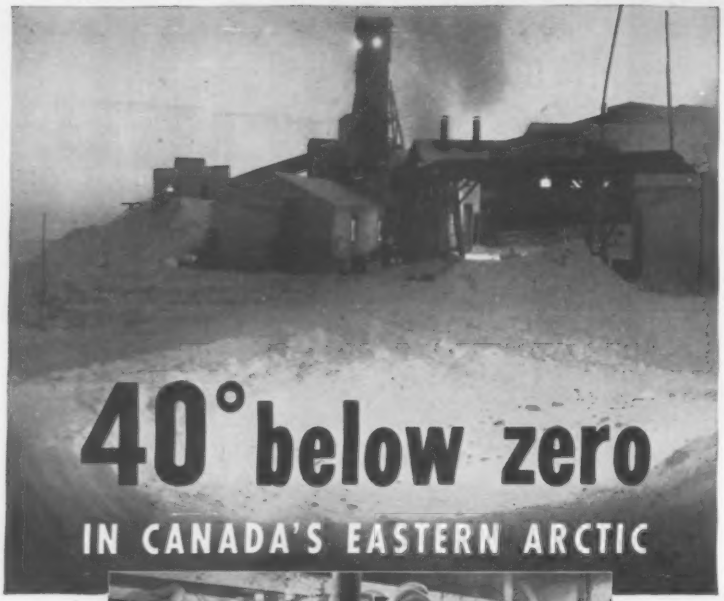
Please send me booklets on ☐ model 35 ☐ Copyflex process and machines.

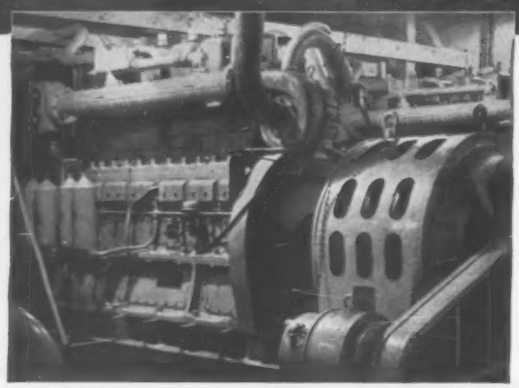
Name_____ **Title**_____

Company_____

Address_____

City_____ **Zone**____ **State**_____





GENERATOR SETS powered by

WAUKESHA *Diesels*

supply all electric power for mine, mill, townsite and camp

On a northern inlet of Hudson Bay, 1950 air miles northwest of Toronto—where daytime temperatures hit 40° or more below zero, and the miners are Eskimos—is Canada's most northerly nickel mine. In so remote a spot the powerhouse engines must be reliable. They are. Both are Waukesha Diesels. They drive the generator sets that supply *all* electric power for mine, mill, townsite and camp of the North Rankin Nickel Mines, at Rankin Inlet, Northwest Territory, Canada. Production is 250 tons daily; ore is high grade and shipping concentrates run 13% nickel; 2.5% copper. The two Waukesha Diesels are Model LRDBS Turbo-supercharged 6-cyl., 8½ x 8½ in., 2894 cu. in. engines.

▪

Waukesha Enginators (engine-driven generator combinations) for Diesel, gas, or gasoline fuels are also available up to 800 KW. Send for literature.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES 378

before September 11. All parties knew and understood the underlying reason for the haste; and, the consideration agreed to be paid was for the extra effort and money required to make the offices available on or before the stipulated date. We have no difficulty concluding that time was clearly the essence of the contract, and all agree that the offices were not ready for occupancy on the agreed date.

"The question remains whether the Fair Exposition waived the breach by acquiescence in the continued performance. Under controlling Oklahoma law, a 'party to a written contract who intends to assert a breach of terms thereof must act in such a reasonable manner as to inform the adverse party of the intended claim of such breach.' Spurgin v. Bennett, Okl., 168 P. 2d 134. And, it is generally held that 'When work is to be done by a time certain, the employer, by allowing it to go on afterwards, thereby treating the contract as still in force, waives the materiality of time and can claim only such damages as he has sustained by reason of the delay.' 12 Am. Jur., Contract, Section 349, page 913.

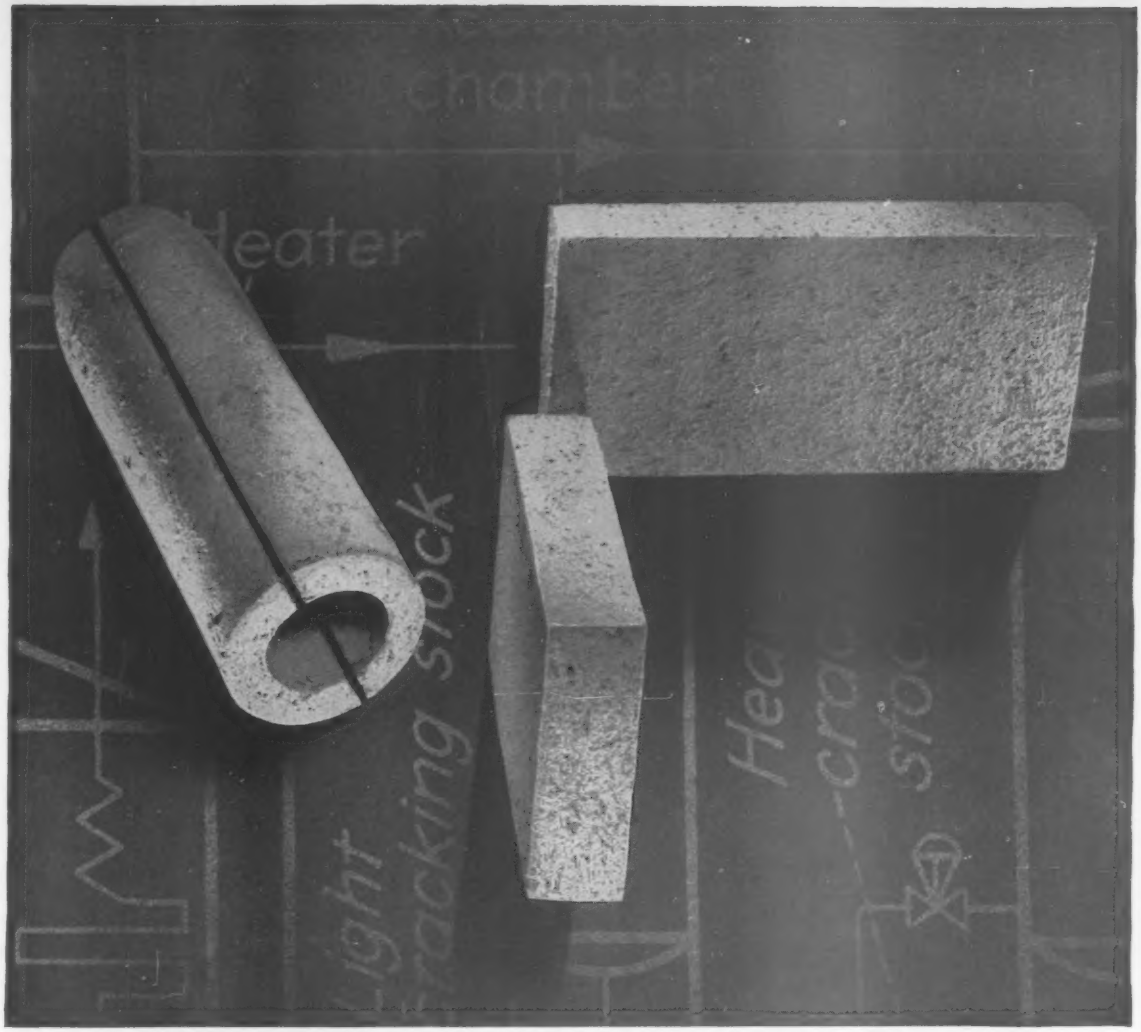
"The Fair Exposition did not promptly declare a breach of the contract. Indeed, the manager of the Fair Exposition testified that the matter of continuance under the contract was never discussed. But the evidence shows without dispute that the contractor, with knowledge and acquiescence of the Fair Exposition, continued to exert extra effort and expense to complete the contract; and, that it was completed and the Fair moved into the quarters one week later on the 18th or 19th. While there was evidence of inconvenience to the Fair, no attempt was made to prove damages. And, there was evidence to show that most of the sum provided for in the contract was used in the acceleration of the work. In these circumstances, we cannot say that the trial court's finding of waiver and estoppel is clearly erroneous, and the judgment is affirmed."

(1) Oklahoma State Fair Exposition v. Lippert Bros., Inc., 243 F. 2d 290, U. S. Court of Appeals, Tenth Circuit, April 12, 1957.

Act of God No Excuse For Nonperformance

Performance of a contract is not excused by what the law calls "an act of God" unless the contract so provides.

In a case recently before a federal court in New Mexico, the contract contained no exceptions for acts of God, and repair work necessitated by a flood was held to be the responsi-



In petroleum refining, as in other process industries, "K&M" Insulations last the life of the equipment.

"K&M" High-Pressure Insulations permit more precise process control!

Permanent and trouble-free, "K&M" High-Pressure Insulations provide peak heating efficiency, lower fuel costs, and tighter heat control year after year. Maintain their insulating efficiency in spite of temperature changes, and other normal operating conditions.

Write to us today for a free brochure which shows how you can cut heating costs.

For temperatures up to 1900°F., use "K&M" Hy-Temp Combination—diatomaceous silica overlaid with "K&M" "Featherweight" 85% Magnesia. Staggered joints prevent heat loss through expansion-caused openings.

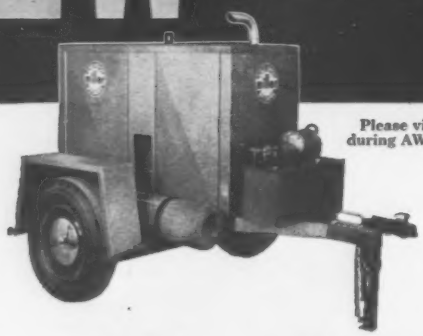
For temperatures up to 1350°F., use "K&M" Kaytherm—hydrous calcium silicate bonded with asbestos fibers. Important for power and petroleum applications.

For temperatures up to 600°F., use "K&M" "Featherweight" 85% Magnesia—a basic carbonate of magnesia mixed with asbestos fibers.

K·M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

NEW DESIGN POWER PERFORMANCE



Please visit booth #507 during AWS welding show

BIG . . . TOUGH . . . RELIABLE

. . . and offered in three models for every "beyond the power line" job:

The **ROUSTABOUT** D-250 DC for metallic arc welding
The **BIG RIG** DA-300 AC/DC for metallic arc welding
The **FIREBALL** DAH-350 AC/DC for metallic arc and tungsten inert gas welding

All models have a 10 kw single phase 115/230 volt ac power plant and deliver, while welding, 1 kw of 115 volt dc auxiliary power. Proven Miller ac generator is driven by Hercules engine. Coupled with the revolutionary new Miller semimetallic rectifier, this produces the industry's finest performing dc welding current . . . bar none!

Complete particulars will be sent promptly. Please indicate model in which you're interested.

miller ELECTRIC MANUFACTURING COMPANY, INC.
distributed in Canada by CANADIAN LIQUID AIR CO., LTD., Montreal • APPLETON, WISCONSIN

LEFAX
TECHNICAL DATA BOOKS
POCKET SIZE • LOOSE LEAF

Printed on loose leaf, 6 hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, condensed accurate, essential, for engineer, technical worker, student, business man. $1.25 each

Architecture
Home Heating
Illumination
Electrician's Data
Builder's Data
Lumber Data
Air Conditioning
Building Constr.
Reinf. Concrete
Piping Data
Surveying
Surveying Tables
Highway Eng'g.
Conversion Tbls.
General Math
Math Tables
Physics
Trig.-Log Tables
Gen'l Chemistry
Chemical Tables
Analytic Chem.
Mech'l Drawing
Machine Design
Machinist's Data
Mech. of Materials
Pwr. Trans. Mach.
Thermo. Tbls. & Charts
Phys. & Thermo. Data
Metals
Metallurgy
Hydraulics
Radio
Television & FM
Electricity, AC
Electricity, DC
AC Motors & Gen'trs.
Transformers, Relays & Meters
Welding Data

Write for FREE catalogs (2000 listings). See how helpful LEFAX can be to you. Send $1.25 book, or $6 for any five books to
LEFAX PUBLISHERS, Dept. EN-48, Phila. 7, Pa.

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT "Placed by Air"

GUNITE
BLO-CRETE WET-CRETE
LINING, ENCASING, FIREPROOFING, REPAIRING

Send for our new bulletin No. 20 of actual photographs, information and detailed specifications.

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 W. Walnut St., Chicago 12, Ill.
1004 Market St., St. Louis 1, Mo.
3206 Houston Ave., Houston 9, Texas
1136 W. Orangethorpe, Fullerton, Calif.
Milwaukee—Twin Cities—Denver—New Orleans

. . . Legal

bility of the subcontractor performing the work that was damaged.

The action was brought by subcontractors against the prime contractor and its surety for a balance due under the contract.

The subcontracts contained completion dates of December 31, 1954, at which time the work called for by the subcontracts had not been completed. Work was still being done under the subcontracts on May 17, 1955, when a flood of such proportions as to constitute an act of God occurred inflicting serious damage to the work.

The subcontractors refused to repair the damage and the prime contractor did the repair work. In the action, the prime contractor counter-claimed for the cost of the extra work it was forced to perform by reason of the failure of the subcontractors to complete their part of the work on the time fixed in their contracts, which was prior to the flood that caused the damage.

The trial court granted judgment to the subcontractors, but this judgment was reversed on appeal, the appellate court[1] holding that there was no specific finding by the trial court that the subcontractors were prevented from completing the contract within the stipulated time set forth in their contracts, and directed a new trial.

The appellate court stated: "The law is well established that intervention of an act of God does not excuse performance of a contract unless loss resulting therefrom is excepted in the contract from the assumed liability. This is also the law of this circuit. The subcontract did not exclude loss occasioned by an act of God." Under such circumstances, the subcontractors were not relieved of the responsibility of repairing the damage caused by the floods unless they could show that the subcontractors were prevented from completing their part of the work before the flood took place by wrongful acts on the part of the prime contractor. Since the trial court made no specific finding on this point, the appellate court directed a new trial.

(1) Barnard-Curtiss Company v. United States, 244 F. 2d 565, United States Court of Appeals, Tenth Circuit (New Mexico) April 25, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts*; *Legal Guide for Contractors, Architects and Engineers*; and *Legal Cases for Contractors, Architects and Engineers*.

Four of the many pumping operations on Pittsburgh project. Riverside location meant handling heavy inflow.

Over 2 million gallons an hour with Jaeger pumps

For both low and high head pumping, 7 of the contractors on Pittsburgh's new $100 million sewer system used 51 Jaeger pumps with a total water handling capacity exceeding 2,000,000 gph

A Jaeger "Sure Prime" pump has four things that you don't get in ordinary pumps—a bigger shell and impeller, an engine of the largest horsepower applicable, a positively lubricated shaft seal and two independent, simultaneous priming actions.

As a result you get doubly-sure fast priming without racing your engine, big capacity at much slower operating speed, high efficiency and longest life from both pump and engine. *Base your pump buying on today's performance.* See your Jaeger distributor or send for latest catalog.

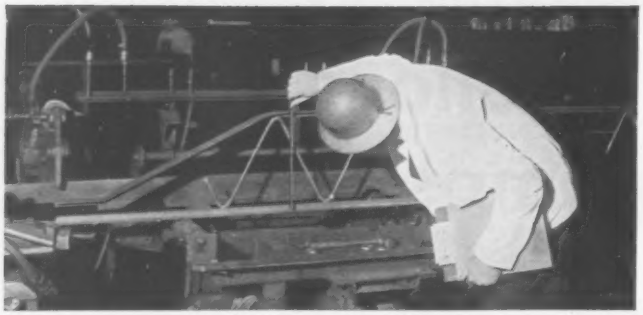
THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • PAVING SPREADERS and FINISHERS

CAT NIPS STRUCTURAL STEEL

TWO MAN CREW SAVES TIME AND MONEY using Republic High Strength Bolts for structural joints in Caterpillar Tractor Co.'s new Industrial Engine Plant at Mossville, Illinois. Only an air-driven torque wrench and a holding wrench were required. As shown, final tightening was done with the torque wrench alone. Installed bolt costs were about 31¢ per unit as compared with twice that amount for field-driven rivets.

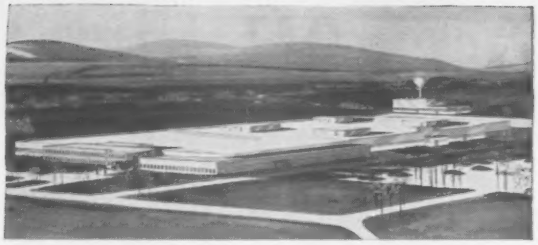


TRUSCON STEEL-JOIST DEPENDABILITY is assured by thorough inspection on an unscheduled basis conducted by a nationally known testing laboratory for the Steel Joist Institute. Truscon "O-T"® (Short-Span) Steel Joists meet SJI manufacturing standards and are qualified to bear its seal of approval. Don't take chances with just any joist. Specify Truscon and be sure of load-bearing predictability and dependability. Mail coupon for data.

FAST, ECONOMICAL, WALL CONSTRUCTION plus functional beauty were two deciding factors in the choice of Truscon Vision-Vent® Window Walls for the University of California's general classroom and office building shown here. The Vision-Vent system provides all of the advantages of modular construction. Each unit is complete, from sill to ceiling, including fixed lights, awning-type ventilator or Truscon Double-Hung Steel Window, and insulated panel. Further, light weight reduces structural requirements. See Sweet's for details, or mail coupon.

JOINT COSTS 50%

with Republic High Strength Bolts



Industrial Engine Plant, Caterpillar Tractor Co., Mossville, Illinois
Giffels and Rosetti, Architects
Darin and Armstrong, Architectural Trades, General Contractors
Joseph T. Ryerson & Sons, Inc., Structural Fabricators

When officials of Caterpillar Tractor Co., Peoria, Illinois, authorized construction of a new Industrial Engine Plant at nearby Mossville, their engineers specified high strength bolting of structural steelwork to help meet early production start-up dates. Joseph T. Ryerson & Sons, Inc., Chicago, was awarded the steelwork contract and, in turn, specified Republic High Strength Bolts.

The ease with which Republic High Strength Bolts were installed is shown on the opposite page. Not only were erection schedules readily maintained, but also past experience of the contractor showed that installed cost of bolts would average only 50% as much as field-driven rivets.

The speed and economy of using Republic High Strength Bolts for structural steel joints result from several factors:

For example, they can be installed by two regular ironworkers using only a torque wrench and standard hand wrench. Highly-skilled, expensive, four- or five-man riveting crews are not required. Fitting-up bolts can be eliminated.

Moreover, rivet-heating equipment is not required, fire hazards are eliminated, and possibilities for injury are lessened.

Finally, Republic High Strength Bolts provide advantages beyond construction speed and economy. They reduce construction noise and allow complete salvage of structurals if future conditions call for building modifications. Their powerful clamp action virtually eliminates fatigue failure in joints subject to cyclic loading.

It will pay you to get complete data on the performance of Republic High Strength Bolts for reference on future structural steel jobs. Simply call your Republic representative, or mail coupon.

REPUBLIC SECTIONAL PLATE PIPE-ARCHES laid in 16 parallel lines make this handsome, maintenance-free stream crossing. Requiring no more upkeep than any other section of highway, this structure replaced a dangerous bridge that was a source of continual expense. A complete line of Republic Drainage Structures is available to solve all types of water runoff problems fast and economically. For facts, send coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. EN-5415
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send me more information on:
☐ High Strength Bolts ☐ Truscon Steel Joists
☐ Truscon Vision-Vent Window Walls ☐ Republic Drainage Structures

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

DRAFTING TRENDS

This Gray Scale Film for rating print quality is included in POST'S new, free Print Evaluation Kit. Among other materials in the Kit is a handy Checklist highlighting important factors to look for in your prints.

New Evaluation Kit shows that many factors determine print quality

Progress in the technology of printmaking in recent years has been tremendous. Despite outstanding developments in reproduction equipment and in print papers and cloths, the yardstick to decide acceptability of a print still remains the same—its *readability*

Since print appearance is so vital in properly transmitting design ideas to plant, field and customers, it is increasingly important to be familiar with all factors that contribute to print readability.

A newly-developed Print Evaluation Kit is now available that goes a long way to help appraise print quality. As coater of a broad range of blueprint and diazotype papers, Frederick Post Company originally developed a number of the materials in this Kit for its own Laboratory use, in order to check its own papers against competitive products.

Materials for rating print quality

The Kit includes various materials useful in helping to rate print quality: an evaluation chart (gray scale film), a rating device and a checklist that reviews a variety of factors, such as image color, stability of line and background, keeping qualities, etc. Several "check points," useful to machine operators in analyzing troublesome print characteristics, are included.

Your Kit will be tailored to your needs

Send today for further information on this free Kit. Variations of this kit are available to suit your print making equipment whether it is an ammonia process or semi-moist machine, whether you favor bluelines, black on white or blueprints.

Write Reader Service Division of Frederick Post Company, 3658 N. Avondale Avenue, Chicago 18, Ill.

POST

SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

Men and Jobs

Church to Head Navy's Southeast Construction

Capt. W. C. G. Church, CEC, USN, has been assigned as District Civil Engineer and District Public Works Officer for the Sixth Naval District with headquarters in Charleston, S. C.

Captain Church has just returned from Spain, where he was Officer in Charge of Construction for military bases. He had previous duty as Assistant Chief of the Bureau of Yards and Docks, and Commanding Officer of the Naval Construction Battalion Center at Port Hueneme, Calif.

W. B. Mason, Jr., Named To FHA Standards Post

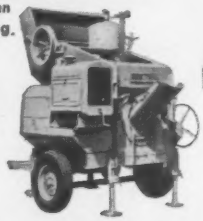
W. Beverley Mason, Jr., director for three years of Federal Housing Administration's urban renewal program, has been appointed assistant commissioner for technical standards for the FHA. He succeeds Charles A. Bowser, who resigned to become director of Webb and Knapp Communities, Inc., New Orleans.

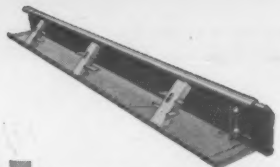
Mr. Mason, 49, joined FHA in 1938 in the agency's underwriting division. In 1948, he became chief of the construction section of the loan guarantee service of the Veterans Administration, remaining in that post until 1953 when he resigned to establish his own housing consultant service in Washington, D. C. One year later, he rejoined the FHA.

Before joining the agency in 1938, he was employed by Porter & Lockie, Washington, D. C., architects, and William P. Lipscomb Co., building contractors, of the same city.

(*Men and Jobs cont'd on p. 77*)

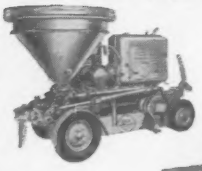
REX BUILDING MIXERS—in all popular sizes, half-bag to three-bag. All are built with traditional Rex quality—more rugged, more lasting, more maintenance-free. One-man spotting and hitching.





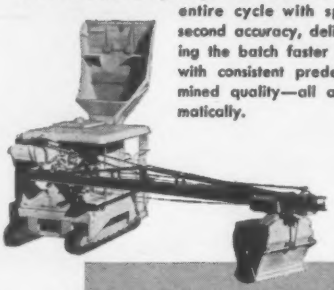
REX FORMS—the simplified setup line with built-in alignment ease. Double-wedge road forms, airport forms, combination curb and gutter forms, curb forms, flexible forms and sidewalk forms. All wanted sizes and types—all ready for fast delivery to you!

REX PUMPCRETE—pumps concrete through portable pipeline up, down, straight and around turns. Saves on preparatory work, protects concrete quality; no chance of segregation of mix.



REX RAILPORTER—for rapid, lowest-cost placement of concrete and bulk materials. Railporter travels, stops unattended on a single portable rail—is fast, easy to set up.

REX PAVERS—today's greatest yardage pavers. Greatest operating ease, too. Rex Exclusive Hydrocycle Control takes over entire cycle with split-second accuracy, delivering the batch faster and with consistent predetermined quality—all automatically.



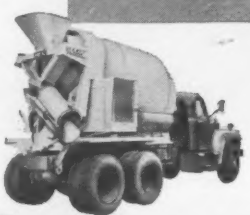
REX PUMPS—for top speed and efficiency in all your dewatering jobs. Self-priming centrifugal pumps in 4000 to 90,000 g.p.m. capacities. Operated by electric motor, or gasoline or diesel engine.

Get

REX®

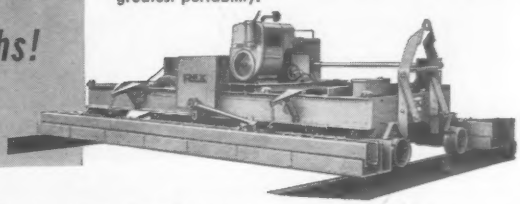
"PLUSES"

the leadership line that has upped the limits of performance to new highs!



NEW REX MOTO-MIXERS—the "cleanest look" of all! Modern, simplified design based on research of what the ready-mix operator wants and needs in a truck mixer. Faster, easier cleanups; lower maintenance. Widest option choice.

REX ROAD FINISHING EQUIPMENT—the high-production line of spreaders, finishers, floats, curing machines, belt and burlap drag machines, subgrade planers and testers. All are designed for efficient operation, maximum operator convenience and greatest portability.



PLAN A VISIT WITH YOUR REX DISTRIBUTOR—IT WILL PAY DIVIDENDS!

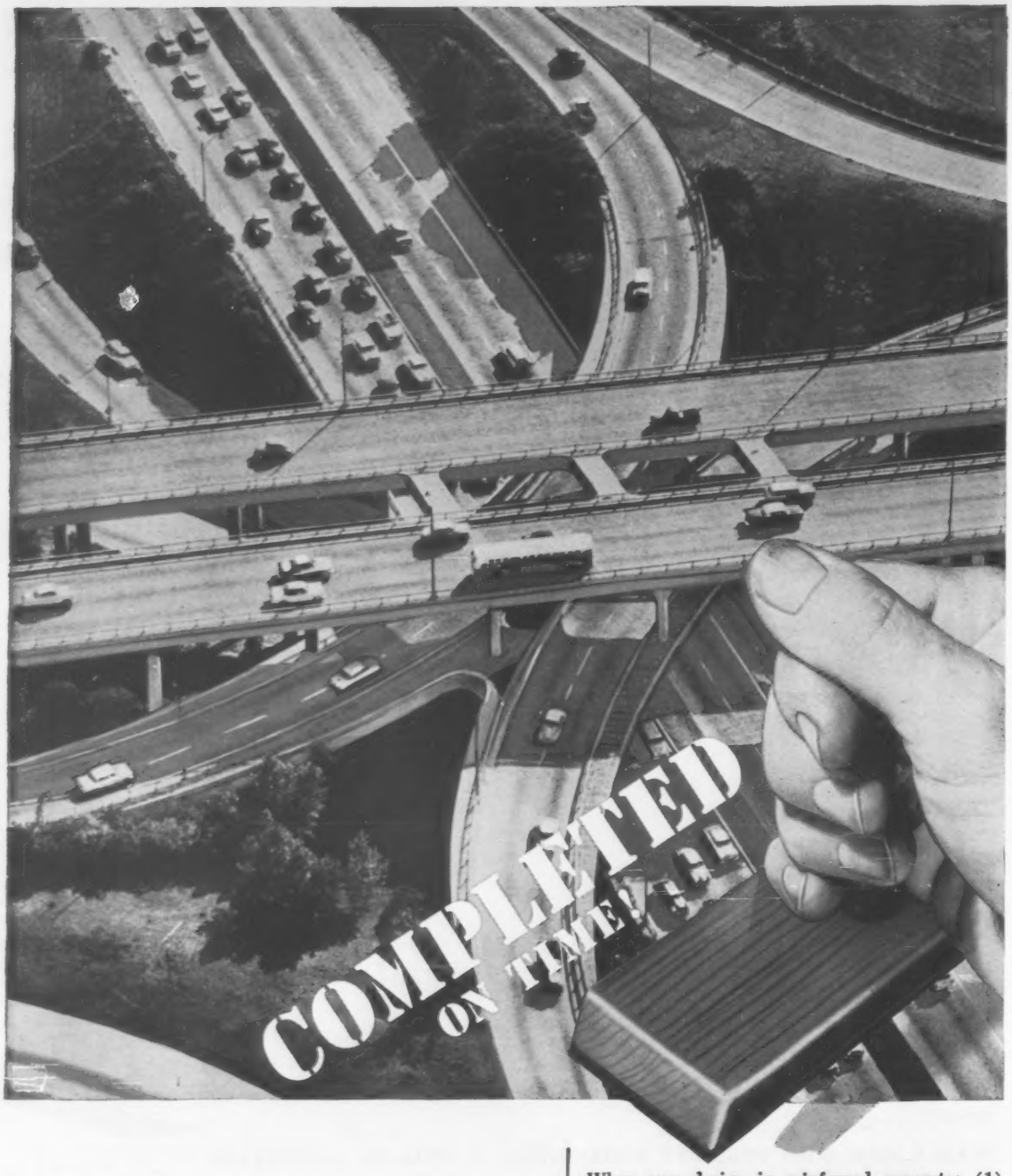
YOURS FOR THE ASKING! Get informative, illustrated literature on Rex Construction Machinery. Ask your Rex Distributor for the complete Rex Literature Library...or for the specific products of interest to you. Or write CHAIN Belt Co., 4633 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CONSTRUCTION REX MACHINERY

MOTO-MIXERS • BINS AND BATCHERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER

CHAIN BELT COMPANY

PUMPS • PAVERS • SPREADERS • FINISHERS • FLOATS • CURING MACHINES • FORMS



There were no delays with REINFORCED CONCRETE

When you design in reinforced concrete: (1) you know your materials and labor are "on location"—ready to start and proceed to completion; (2) necessary field changes can be made without costly delays.

Whether a simple bridge or complex structure like this beautiful four-level highway separation structure in Los Angeles, reinforced concrete provides a construction material of unusual flexibility and durability.

Designer: California Division of Highways.

CONCRETE REINFORCING STEEL INSTITUTE

CONCRETE REINFORCING STEEL INSTITUTE CRSI FOUNDED 1924

38 S. Dearborn St.
Chicago 3, Illinois

Careers

Associations

Vernon Peoples, city engineer at Raleigh, N. C., has been elected president of the North Carolina Chapter of the American Public Works Association.

A. A. Carswell, vice-president of the Hawaiian Dredging and Construction Co., Honolulu, T. H., has been elected president of the General Contractors' Association of Hawaii.

M. O. Bader has been reelected president of the Associated General Contractors of Delaware.

Joseph J. Griesemeyer, of Springfield, Mo., has been elected president of the Associated General Contractors of Missouri.

Charles T. Carson, Windsor, Ont., has been elected 1958 president of the Association of Professional Engineers of Ontario.

Paul Poirier, vice president of the Helana, Mont., branch of the American Society of Civil Engineers, has taken over as president, replacing Donald H. Park who resigned to move to Salt Lake City.

Frank A. Robino, Jr., has been elected president of the Home Builders Association of Delaware.

Freeman Wolfe has been elected president of the Southern Illinois Builders Association. He is president of H. M. Wolfe & Co. of Granite City, Ill., and succeeds **William Keeley,** Keeley Bros. Construction Co., East St. Louis, Ill.

George C. Lipsey has been elected president of the Association of Professional Engineers of British Columbia. **R. E. Wilkins** was elected vice president.

H. Bruce Baty of Armco Drainage and Metal Products, Inc., Middletown, Ohio, will become president of the Ohio Society of Professional Engineers this spring.

David Rose, New York City builder, has been re-elected to serve for a third term as president of the American Technion Society, which supports the Technion-Israel Institute of Technology located in Haifa, Israel.

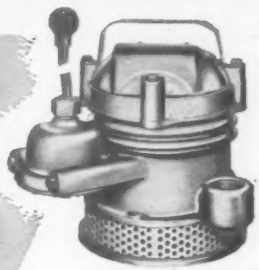
Gordon K. Ray has been named manager of the Portland Cement Association's Highways and Municipal Bureau. He succeeds **Leo M. Arms,** who has advanced to technical adviser of that bureau. Mr. Ray graduated from the University of Illinois in 1941 with a B.S. of C.E. degree and has been with PCA since 1945. Mr. Arms, a civil engineering graduate, University of Missouri, has been with the association since 1932.

(*Men and Jobs cont'd on p. 78*)

weil PUMP'S
New SUBMERSIBLE SUMP PUMP
Built for Automatic Submerged Operation
A PACKAGED UNIT . . . priced lower than many conventional sump pumps.

OPERATES UNDER WATER
Hermetically sealed motor **with overload protection** and automatic reset, and positive leak-proof rotating shaft seal assures dependable performance at all times. If current fails moisture cannot damage motor.

ECONOMICAL TO INSTALL
Can be installed thru a 15" opening. Is easily placed in a metal tile or concrete sump 2' to 8' deep. Installation can be sealed and made GAS-TITE.



MICRO-SWITCH CONTROL
Fool-proof and trouble-free. Pump and switch engineered for one million starts ...without attention.

MOTOR: 1/3 HP, 1750 RPM, 110 volt **CAPACITOR TYPE** with 8 ft. waterproof cable and plug
IMPELLER: Open, Non-corrosive
SCREEN: Brass
BASE: Sturdy cast-iron
DISCHARGE: 1¼"
SHAFT: Stainless steel
DIMENSIONS: Height: 11"; Diameter: 11¾"; Weight: 50 lbs.

FOR DRAINING
Drainage Sumps
Valve Pits
Pump Pits
Machinery Pits

PERFORMANCE

Discharge Head (Ft.)	5	10	15	20	22	24
Capacity, GPH	3600	3350	2400	1830	1160	540

STOCKED BY YOUR JOBBER

weil PUMP CO.
1528 North Fremont St. • Chicago 22, Ill.

FOUNDATION CONSTRUCTION BY
McKINNEY
DRILLING CO.
BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS
CAISSONS
DRILLED & UNDERREAMED
PIERS
WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB
ANYWHERE IN THE WORLD
OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C. • CLEVELAND, OHIO

The BELMONT IRON WORKS
Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Belliron
STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops: Eddystone, Pa.—Philadelphia, Pa. Royersford, Pa.
22nd St. & Washington Ave. Philadelphia 46, Pa. Main Office
New York Office 44 Whitehall St. N. Y. 4, N. Y.

"IN-PLACE" SHEAR READINGS

FAST, ACCURATE, WITH NEW ACKER VANE TEST KIT!

The Acker Vane Shear Test Kit has everything needed to obtain fast, accurate, "in-place" shear readings to depths of 100 feet!

It's easy to use and provides accurate soils information at low cost! For easy in carrying, the entire set of tools are packaged in a handy steel kit.

Write today for prices and free illustrated folder 7001 ENR

Assemble the Vane to the Rod!

Insert in Casing and Apply Pressure to the Torque Wrench!

Consult the Torque Chart for Accurate Reading!

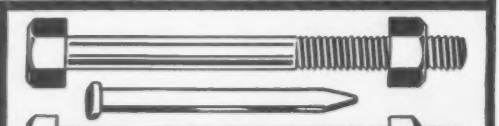
ACKER DRILL CO., INC. 725 W. Lackawanna Avenue Scranton, Penna.

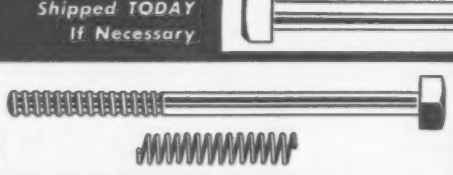
a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

HOT DIP GALVANIZED OR BLACK
HARDWARE
FOR HEAVY CONSTRUCTION

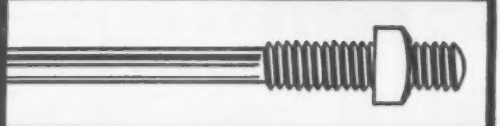
Made to your specifications of: Steel or Genuine Wrought Iron.

Shipped TODAY If Necessary





BOLTS, SCREW ANCHORS, TIE RODS, UPSET RODS, STRAPS, WASHERS, STAPLES, DOCK SPIKES, MANHOLE HARDWARE, ETC.



JERSEY BOLT & SPIKE CORPORATION
MANUFACTURERS • FABRICATORS
Plant and Main Office: 9 Lister Avenue, Newark 5, New Jersey
Direct lines: New Jersey MArket 3-0333 New York REctor 2-3958

. . . Men and Jobs

Herschel H. Allen has been elected president of the American Institute of Consulting Engineers, succeeding **Edward H. Anson**, New York City. Mr. Allen is senior partner with J. E. Greiner Co., consulting engineers, Baltimore. **Ellis E. Paul**, partner Howard, Needles, Tammen & Bergendoff, New York City, and **Richard H. Tatlow, III.**, president, Abbott, Merkt & Co., Inc., New York City, were elected vice presidents of the institute.

The National Constructors Association has elected **Carl B. Whyte** president. Mr. Whyte is president of Procon, Inc., Des Plaines, Ill. **W. R. Wood**, president Girdler Corp., Louisville, was elected vice president.

Clarence J. Beller and **Anton J. Eichmuller** have been elected president and vice president, respectively, of the Cleveland Society of Professional Engineers. Mr. Beller is vice president of electrical operations and engineering, Cleveland Illuminating Co. Mr. Eichmuller is a consulting engineer.

D. E. Kelbey, vice president and general manager of Alex Robertson Co., Paramount, Calif., has been installed as president of the Southern California Chapter, Associated General Contractors of America.

Marion H. Newton, of Albany, has been made engineering assistant to John W. Johnson, New York State superintendent of public works.

G. Franklin Beall, vice president, Beall Pipe & Tank Corp., Portland, Ore., is elected president of the Toncan Culvert Manufacturers Association; Jas. M. Wood, vice president, Choctaw, Inc., Memphis, Tenn., is the new vice president; Wm. J. Sweeney, vice president and general manager, Empire State Culbert Corp., Groton, N. Y., is elected secretary-treasurer; and Hubert E. Snyder is reappointed managing director of the association.

Harold W. Stillman, Jr., has joined the staff of the American Concrete Pipe Association as assistant to the managing director, **Howard F. Peckworth.**

Maurice Joubert, Montreal builder, has been elected president of the National House Builders Association of Canada.

David M. Showalter has been named field representative for the Constructors Association of Western Pennsylvania. His duties will be in safety engineering, industrial relations and specifications.

Carl F. Lind, San Joaquin County flood control engineer of Stockton, Calif., has been appointed district engineer for the Asphalt Institute at Los Angeles. In his new post, Mr. Lind succeeds **Don G. Evans**, who recently resigned.

SEE THE PRINTMASTER 810
AT THE
DESIGN ENGINEERING SHOW
CHICAGO, APRIL 14-17

Better Prints . . .

Easier Printmaking . . .

Big, new operating features

The Printmaster 810

Here's the advanced Printmaster 810—with features that outdate every other whiteprinter in its price class. Now you can assure yourself of better whiteprints, more easily, in less time.

1. **More compact—lower in height** . . . saves valuable floor space, allows easier lamp replacement, better control . . . means less fatigue.
2. **New design of brush feed assembly** . . . to automatically control curled edges, folded corners.
3. **New print pick-off** . . . prevents tearing, sticking or scratching.
4. **Improved tracing release** . . . convenient release pedal means immediate control of tracing and print—no loss of time and material.
5. **Cool cylinder design** . . . means practically no sticking in processing plastic-coated materials and foils.
6. **New filtered air system** . . . Fiberglas® filter delivers filtered air—for cleaner machine, cleaner prints—means less shut-down time for cleaning.

And Ozalid offers other great *proven* features such as new steel frame support . . . double paper rods . . . both rear and front delivery . . . and U/L approved safety devices.

Why not test-run your own tracings through the new "810"? Simply call your local Ozalid representative or write: Ozalid, Dept. M-4-3, Johnson City, N. Y.

OZALID®

First Name in Whiteprinting

A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

MADISONVILLE, KENTUCKY, is so efficiently managed that for the third successive year no property taxes were levied. With this record for efficiency, it is only natural that corrosion-proof Clay Pipe was chosen for the city's new sewerage expansion program. More than twenty-two and a half miles of Vitrified Clay Pipe are going into the project.

In the opinion of J. Sanders Parker, Consulting Engineer, Clay Pipe is "the best that could be obtained for this service." Clay Pipe never wears out . . . does not rust, rot, or disintegrate . . . is the only pipe backed by a long-term written guarantee. And the new stronger, longer lengths speed installation . . . cut labor costs.

When investigating materials for sewer expansion, remember . . . substitute pipe may have *some* of the features of Clay Pipe, but only Clay Pipe has *all* the features you can trust.

Public Officials: David Parish, *Mayor;* A. O. Johnston, *Councilman, Chairman of Water and Sewers.*

Consulting Engineers: J. Sanders Parker; F. E. Stepp, *Resident Engineer.*

Contractors: C. F. W. Construction Co., Inc.; Sterrett Construction Co.

C-458-I

Vitrified **CLAY PIPE** *Never Wears Out*

NATIONAL CLAY PIPE MANUFACTURERS, INC. 1820 N Street, N. W., Washington, D. C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio • 703 Ninth & Hill Bldg., Los Angeles 15, Calif. • 100 N. La Salle St., Rm. 2100, Chicago 2, Ill. • 206 Mark Bldg., Atlanta 3, Ga.

Building Manual

BUILDING CONSTRUCTION HANDBOOK—Edited by Frederick S. Merritt. 906 pp. McGraw-Hill Publishing Co., New York, Toronto, London. $15.

Here, in a single volume, is collected the essential information needed by nearly everyone concerned in any way with building design and construction. Composed of 29 sections written by 25 authorities, the handbook took more than four years to prepare; yet it includes the latest developments in design theory and construction practices, presented in easy-to-understand language so as to be just as useful to the student and the nonspecialist in the field as to the specialist.

The editor of the book, Frederick S. Merritt, is a senior editor of ENGINEERING NEWS-RECORD, who was able to draw upon his experience both as a practicing engineer and an editor in planning the contents and selecting the authors. All the latter are architects, engineers and contractors expert in their specialties. As a result, the book has a practical approach in which as much attention is given to why certain techniques, materials or equipment should be selected as is to how they are used.

The handbook starts off with a section on the relationship of owners, architects, consulting engineers and contractors on building projects. Subsequent sections cover properties of building materials, stress analysis, structural design, building components, construction practices, control of interior environment, building services and surveying. It terminates with sections on estimating construction costs, construction management, specifications, insurance and bonds.

To those contemplating construction of a building, as well as to designers and builders, the handbook should be exceedingly useful. It defines hundreds of terms. It explains the role of the architect during design and construction, indicates what skills are expected of him, and discusses selection of an architect and a contractor for a project. It describes and evaluates types of construction contracts in use. And it enumerates the owner's responsibilities and duties in design and construction.

For reference purposes, there are summaries of building-material properties; design tables; data on types of windows and doors and floor coverings, on characteristics of electric motors, and many other items. A table of unit costs for rough estimates of construction costs of various types of buildings will be found particularly useful. In addition, there are reproductions of forms for construction reports and records; a bibliography for specifiers; check lists for specifications and for school and factory design; and a list of trade associations, with addresses.

Structural engineers will be particularly interested in the single-cycle method of moment distribution for continuous beams and frames published for the first time. The book also offers the fundamentals of plastic design. And in keeping with current trends, it presents methods of computing stresses in arches, rigid frames, cylindrical shell structures, domes and catenaries.

The practical approach is evident in the sections on soil mechanics and foundations and on steel, concrete and timber design.

The Building Construction Handbook should be a valuable addition to the libraries of architects, consulting engineers, contractors and their employees, structural designers, plant engineers, students, material and equipment suppliers and many others interested in building design and construction.

Covered Bridges

COVERED BRIDGES OF THE NORTHEAST—Richard Sanders Allen. 121 pp. The Stephen Greene Press, Brattleboro, Vt. $5.95.

More effectively perhaps than any other work of the civil engineer, the bridge displays his craft for all to see. In the minds of most laymen as well as many of their technically skilled brethren, the bridge symbolizes the romance of engineering. One layman, Richard Sanders Allen, the son of an upstate New York consulting engineer, was so captivated years ago by the nostalgia and romance of covered bridges that he began making something of a career of studying them.

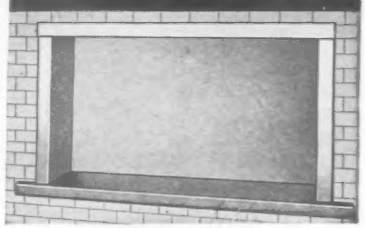
Since then, he has unearthed some 20,000 items of Americana on the subject, and 15 years ago he started a magazine called Covered Bridge Topics, later taken over by the Society for the Preservation of Covered Bridges. Now he has published this combination history, photo collection, travelog and collection of reminiscences and anecdotes about these relics of an all but vanished phase in the art of bridge-building—and it was nearly all art and no science in the heyday of covered bridges.

Profusely illustrated, including many photos of bridges no longer standing, plus pictures of a very few built as late

DIG
in the
DRY
with a
MORETRENCH
WELLPOINT SYSTEM

MORETRENCH CORPORATION
World's Oldest . . . Largest . . .
Most Experienced
Predrainage Organization
Send for Catalog
90 West St., New York 6, N. Y.
Chicago, Ill. • Tampa, Fla. • Houston, Tex.
Rockaway, N. J.

Peelle
Pass
Window



DINING ROOM SIDE

This unit consists of an integral hollow metal door and frame designed for quick, economical installation in schools, cafeterias, restaurants, ticket and baggage rooms, cloak rooms, gymnasium issue rooms, etc. Also with glass frame for hospital observation rooms and laboratories. Special extended sills furnished when specified.

See Sweet's Arch. File 33c/Pe, page 9.

THE PEELLE COMPANY
47 Stewart Ave., Brooklyn 37, N. Y.
ALSO RICHMOND FIREPROOF DOOR CO.
Richmond, Ind.

RENT or BUY
STEEL SHEET
PILING
BY
DIALING

CHestnut 1-4474
Call St. Louis Collect
Any Job . . . Anywhere
QUICKEST SHIPMENTS

MISSISSIPPI
VALLEY
EQUIPMENT CO.
1908 Railway Exchange Bldg.
ST. LOUIS 1, MO.

Cut lighting costs

Onan
DIESEL
ELECTRIC
PLANTS

Save you money every hour. Pay for themselves quickly on big lighting jobs. Built for rugged service with extra-large bearing surfaces, Stellite exhaust valve seats and other long life features. Engine and generator direct connected . . . no belts or couplings. 3KW, single cylinder; 5KW, two-cylinder. Standard voltages.

Gasoline Models: 500 to 75,000 watts
Write for folder of portable models

D. W. ONAN & SONS INC.
2894A UNIVERSITY AVENUE SOUTHEAST
MINNEAPOLIS 14, MINNESOTA

as this decade, this very readable book devotes a chapter to each of the eight states in its scope—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island (where covered bridges are now "only memories"), New Jersey (with only one remaining covered span), and New York.

There is also a chapter on covered railroad bridges, one on tools and construction methods of the old-time bridge builders, and one on the builders themselves. Among the latter are listed men like William Howe and Willis Pratt, whose surnames survive as truss types in the language of today's engineer.

Winding up the volume are a catalog of the 241 covered bridges existing in the eight states, a roster of builders, and a chart showing the distribution by state of the 15 structural varieties represented.

The Business World

MANAGEMENT FOR ENGINEERS—By Roger C. Heimer. 453 pp. McGraw-Hill Book Co., New York, Toronto, London. $6.75.

The objective of this textbook is to familiarize engineers with the decision-making procedures of business firms. In the process, it portrays the mechanism of the modern business world, with the principal aim of closing a gap in engineering education.

Engineers are schooled in the sciences; they are trained to make decisions objectively, based on facts. In contrast, business management also must consider the human element, and thus, its decisions are more subject to the vagaries of human nature. Because they are likely to be in contact with management in their professional work or because they may assume managerial positions, engineers need to develop an understanding of management problems. This book seeks to fill that need.

It provides information on the costs of the many factors affecting production and on cost control. It sheds light on the basic financial transactions of business firms. It discusses organizational structure and concepts of authority, coordination of activities, and communications. And it acquaints the reader with basic record keeping for corporate financial transactions.

The legal forms of business organization are explained in an early chapter. Subsequent chapters take up other characteristics of business firms. They cover raising of funds for operation and expansion, labor, budgeting and organization. These chapters give a picture of business operations that prepares the reader for the final chapters dealing with decision making.

Reports & Pamphlets

• **Bugs in sewage**—Transactions of a seminar on biological problems in water pollution held at the U. S. Public Health Service's Taft Sanitary Engineering Center in April, 1956 have been published. Uses and value of bio-assays are the subject of three papers. The uses and value of biological indicators of pollution are discussed in 11 papers. Protozoa, algae, diatoms, fungi, clams, snails and aquatic insects as indicators of pollution are examined. Current investigations in water pollution biology; water quality criteria for aquatic life; and the training of aquatic sanitary biologists are also the subject of papers included in the publication. Copies of "Biological Problems in Water Pollution" are available at the Taft Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio.

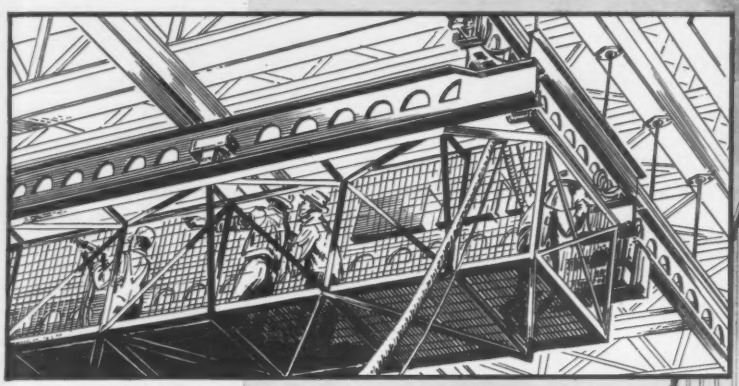
• **Water rights study**—Water rights laws of the state of Illinois have been studied by a law professor for the state chamber of commerce with a view to remedying their deficiencies. Illinois is a strong common law state following the eastern riprarian doctrine. The report rejects the western appropriative doctrine for Illinois in favor of modifying existing law to allow greater "reasonable use". The study, titled "Illinois Water Rights Law", can be obtained for $1 from the Illinois State Chamber of Commerce, 20 N. Wacker Drive, Chicago 6, Ill.

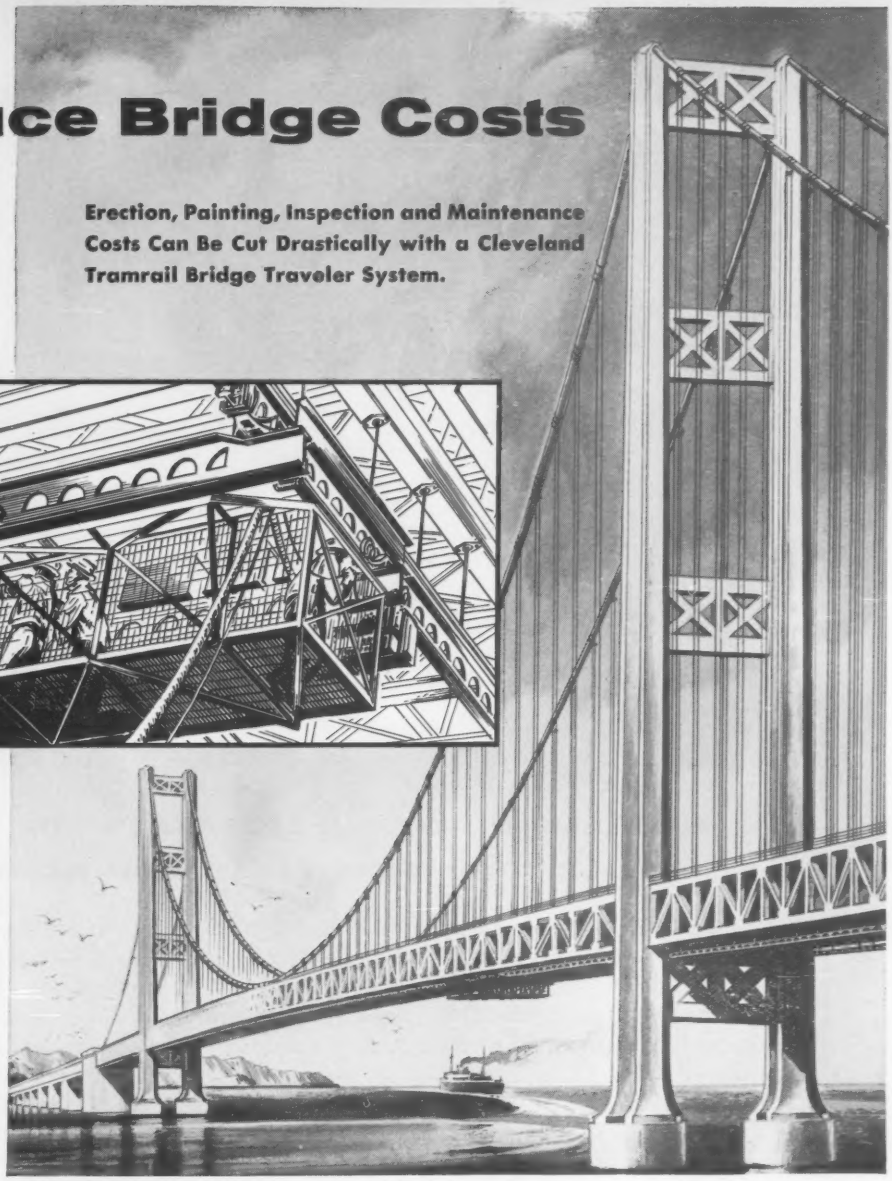
• **Water System Inventory**—The 1956 Inventory of Municipal Water Facilities in Communities of 25,000 Population and Over has been published by the U. S. Public Health Service. It is expected that copies will be available shortly within the near future. Highlights of the cooperative federal-state survey are these: Almost 85 million persons residing in 559 communities are served by public water supplies from 614 separate facilities. Approximately 64 million persons received surface water and 13 million from ground sources, with the remainder receiving water from both sources. Of 526 communities reporting ownership, 439 systems were publicly owned and 87 were privately owned. Data on population served, safe yield of source, treatment plant and distribution system capacity and water usage for each community are presented in the tabulation.

• **Membrane filter evaluation**—Results of a comparative evaluation of the membrane-filter technique for enumerating coliform bacteria in water is included in the 9th annual report of the Ohio River Water Sanitation Commission.

Reduce Bridge Costs

Erection, Painting, Inspection and Maintenance Costs Can Be Cut Drastically with a Cleveland Tramrail Bridge Traveler System.





Cleveland Tramrail Bridge Traveler Systems for manual or electric operation are available for bridges of every type. Travelers may be fitted with sand-blast, paint-spraying and other equipment. For situations where the pier arrangement prevents standard traveler from reaching areas between, Cleveland Tramrail has developed a retractible type traveler.

WHAT are you doing to cut bridge erection costs? What are you doing to simplify inspection? What are you doing about reducing maintenance costs?

You can make sizeable savings in these areas and aid safety by installing a Cleveland Tramrail Bridge Traveler system on a bridge during the early stage of construction.

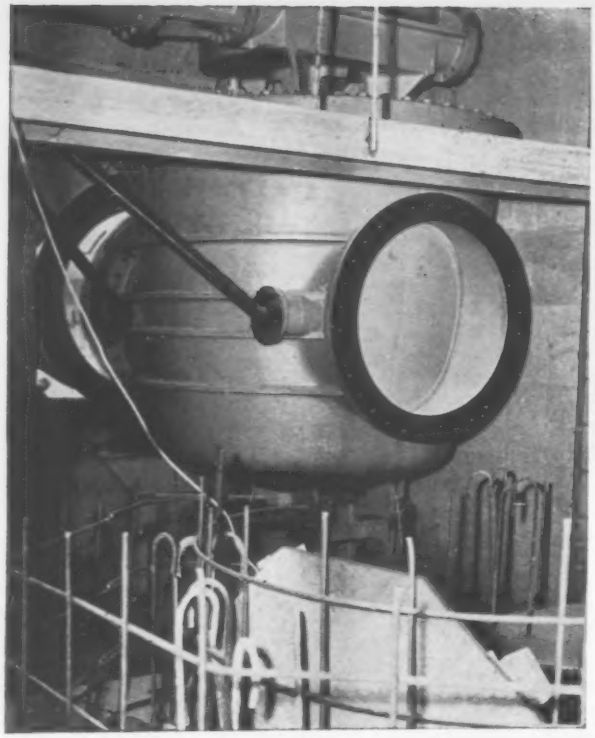
The equipment operates on tracks suspended below the bridge deck. It can be quickly traveled to any point underneath a bridge. No time or effort need be spent erecting scaffolding or on other means, for a Cleveland Tramrail carrier will deliver men, equipment and materials wherever required. If necessary, it can also be designed to provide easy access to the sides of a bridge.

Your inquiry is invited.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 3139 E. 290 ST. • WICKLIFFE, OHIO



▲ Downhill view from Iron Mountain tunnel inlet shows first two conduits and pumping station, with reservoir and aqueduct in background. Excavation at right of pumping station will house third set of pumps, and third conduit will be added.

◀ This SMS-Rotovalve at Iron Mountain shows clearly the drop-tight shut-off position. In operation, the conical plug first lifts, then turns, finally reseats, giving you precise aperture control.

3 MORE SMS-ROTOVALVES ORDERED FOR PUMP DISCHARGE SERVICE AT IRON MOUNTAIN

As part of the expansion program for increasing the supply of water to southern California through the Colorado River aqueduct, three more SMS-Rotovalves have been ordered by the Metropolitan Water District of Southern California. These three 48″ x 64¼″ tapered Rotovalves, duplicates of six already installed at Iron Mountain Pumping Station, will be used for pump discharge service. Their inherent characteristics of a large reduction of flow area during the early part of the closing stroke make them ideally suited to control of surges in the event of emergency shut-off.

SMS-Rotovalves give the least possible pressure loss. In the open position, their full line opening offers no more resistance than a straight piece of pipe of the same diameter. Hydraulic unbalance and mechanical design make operation easy, and less powerful operators may be used. Rotovalves' flexibility suits them to any type of operation, any method of control, or any sort of location.

To obtain information on SMS-Rotovalves, as well as on the entire SMS line of Butterfly and Ball Valves, contact our nearest representative, or write S. Morgan Smith Company, York, Pennsylvania.

S. MORGAN SMITH HYDRODYNAMICS

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

2

Rotovalves • Ball Valves • R-S Butterfly Valves • Free-Discharge Valves • Liquid Heaters • Pumps • Hydraulic Turbines & Accessories

The membrane-filter (MF) procedure has been compared to fermentation-tube method expressed in the most probable number (MPN). Testing of the same water samples by the two methods over the last year by Orsanco has resulted in too much variation to warrant consideration of substituting the MF method for the MPN procedure at this time. However, there is much to be said for the MF method and comparative studies are continuing. Orsanco also reports no final results on an investigation into the effect on stream self-purification of the deeper pools in the Ohio River that will result from the current navigation improvement program. The report is available from Orsanco at 414 Walnut St., Cincinnati 7, Ohio.

• **National water resources**—The availability of water in the United States has been studied by D. R. Woodward of the Department of the Interior. Special attention was given to estimated industrial needs by 1980. According to the study the gross resources of water of the nation are equivalent to an average flow of about 1,164 bgd. Of this total, only 314 bgd is considered a reliable supply. The remainder is mostly lost by runoff during periods of excess flow. An analysis was made of 17 river basins or groups of basins as to present and predicted availability of water for industrial use. Water use for domestic, industrial and agricultural purposes totaled 221 bgd in 1955. By 1980 total usage is expected to rise to 600 bgd with the major increase to come from industrial needs. Dependable sources in 1980 are expected to be about 500 bgd. The report concludes with general recommendations on meeting the disparity between supply and demand at that time. "Availability of Water in the United States with Special Reference to Industrial Needs by 1980" is available from the Industrial College of the Armed Forces, Washington, D. C.

• **Polaris tables**—The 1958 edition of "Solar Ephemeris and Polaris Tables" has been published. The 96 page booklet contains complete instructions for determining azimuths from the sun and the latitude by Polaris. Directions for making astronomical observations and computing results by direct solar observation and time from same observation; meridian by solar attachment; meridian by Polaris at elongation; azimuth by Polaris at any hour angle; latitude by sun at noon, and latitude by Polaris are included, as well as required tables. The booklet may be obtained for 50 cents from C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass.

powerful new air entraining agent

Ayr-Trap is much more effective than other concrete air entraining agents—complies with major Federal and State Specifications including ASTM-C260-54. Newly formulated, Ayr-Trap is both economical and efficient in mixing for structural masses, paving, flooring, pipes and blocks. Less than 1 ounce per bag of cement does the job.

Ayr-Trap is *guaranteed* to retain its efficiency throughout storage. For complete details, write for our 4-page Ayr-Trap Catalog to Dept. H57-8101.

A. C. Horn Companies
SUBSIDIARIES AND DIVISIONS
Sun Chemical Corporation
10th Street & 44th Avenue, Long Island City 1, N. Y.

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

DUDGEON HYDRAULIC JACKS
SALES RENTALS
• CAPACITY TO 600 TONS
FOR:
PILE TESTING
UNDER-PINNING
BRIDGES
PIPE PUSHING
SOIL TESTING
Write to Dept. R

RICHARD DUDGEON INC.
799 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

Being SQUEEZED on bids?

Let us quote on your requirements for these quality steel products, manufactured by prominent century-old West European mills—

- Larssen Steel Sheet Piling
- Piling Pipe
- Bolts, Black and Galvanized, Step, Foundation, Carriage and Machine
- Concrete Reinforcing Mesh
- Concrete Reinforcing Bars, Plain and Deformed
- Wire and Strand for prestressed concrete
- Wire rods and hard drawn wire in coils for spirals
- Nails of all kinds
- Furring Channels
- Bulb Tees, BD1214 Mesh
- Stucco Netting, Reverse Twist Woven and Self-furring welded
- Welded Galvanized Mesh and Hardware Cloth
- Wire Rope and Cable
- Guy Wire

Even More Substantial Savings on Off-Shore Projects.

KURT ORBAN COMPANY, INC.
44 Exchange Place, Jersey City 2, N. J.
In Canada: Kurt Orban Canada, Ltd., Vancouver, Toronto, Montreal

Community College Takes Flexible Bids

A community college for 600 students at Auburn, N. Y., will cost $2,068 per student, $15.43 per sq ft and $1.01 per cu ft. Beardsley and Beardsley, of Auburn, are the architects.

This is a two-story building with 80,420 sq ft of floor area and 1,229,200 cu ft of space. Its facilities include: library, student commons, a 108x84 ft gymnasium that will seat 1,000, an auditorium to seat 600, stage, cafeteria, four science laboratories, business suite, all purpose room, 13 class rooms, seven offices, an administration suite, locker room, and kitchen.

Total contract cost, $1,241,150, is analyzed:

October, 1957	Contract Costs	% of Total	Average Cost per sf	cf	student
Size & capacity	.....	....	80,420	1,229,200	600
General construction	$901,450	72.6	$11.21	$0.73	$1,502
Plumbing	56,600	4.6	0.70	0.05	94
Heating & ventilating	152,600	12.3	1.90	0.12	254
Electrical	130,500	10.5	1.62	0.11	218
Total	$1,241,150	100.0	$15.43	$1.01	$2,068

Completion Date: May, 1959

This includes additions to the base bid of $900 for asphalt tile floor and $1,100 for acoustic tile. The contractor is E. B. Vollmar Co., Auburn, N. Y.

Alternate bids taken, but not adopted, would have made these differences:

On the minus side, savings were realized by omission of	
Road excavation on an avenue extension	−$5,086
Walks & parking area	−15,246
Fine grading & seeding	− 4,068
Acoustic ceilings	− 1,639
On the plus side, the costs were increased by these amounts because alternates were not adopted	
Marble-substitute face brick, etc.	+$1,278
Stair railing—substitute aluminum	+ 1,956
Metal acoustic panel ceilings	+ 9,500
Gym & stage wood flooring	+ 3,003

Unit prices bid for adjusting quantity variations were:

		GC	Heating	Electric
Excavation, earth	cy	$2.50	.....	.....
rock	cy	30.00	$40.00	$30.00
Concrete, footing	cy	60.00	.....	.....
above top footing	cy	80.00	.....	.....

Mechanical contractors include James J. Hickey, plumbing and heating and P. Fisher, electrical work, both of Auburn.

The principal construction features are:

Concrete frame with flush beams and concrete joists throughout all floor and roof areas except tubular steel columns for exterior walls, with complete structural steel frame for the superstructure of the auditorium and gymnasium.

Exterior walls brick with block backup with large window areas in aluminum window wall and porcelain enamel panels.

Trim around entrance ways Vermont marble.

Interior surfaces are exposed brick and painted block, with ceramic tile walls in toilet and locker rooms.

Corridor floors are terrazzo, classroom floors are resilient tile, gym floor, wood.

Fluorescent lighting is used throughout.

Heating system (8 zones) is forced hot water, with unit ventilators, unit heaters, fin radiation, package boilers for automatic fuel.

Owasco, N. Y. School Costs $1,276 Per Pupil

This $765,503 elementary school at Owasco, N. Y., for 500 to 600 pupils will provide these facilities: 20 classrooms, library, office, health department, kitchen, combination cafeteria and gym, an auditorium seating 250, and utility and locker rooms. Beardsley & Beardsley, Auburn, N. Y., are the architects.

The building is one story, height 11 ft and 22 ft. It has a 41,620 sq ft of floor area and a cube of 619,000.

The general contractor is W. E. Bouley & Co., Inc.

Mechanicals contractors include G. W. Hornbeck, plumbing, James J. Hickey, heating and P. Fisher, electrician, all of Auburn.

Contract costs, including mechanicals, break down like this:

July, 1957	Total Contract	% of Total	Average cost per sf	cf	pupil
Size & capacity	.....	.....	41,620	619,000	600 (Max)
General contrad	$559,573	73.1	$13.45	$0.91	$933
Plumbing	32,470	4.2	0.78	0.05	54
Heating & ventilation	113,880	14.9	2.73	0.18	190
Electricity	59,580	7.8	1.43	0.10	99
Totals	$765,503	100.0	$18.39	$1.24	$1,276

Completion: August, 1958

This price is based on deducting from the base bid $11,127 for window-wall and $5,300 for folding partition.

To the plumbing contract, $470 is added for a hydrant.

Alternates not adopted include:

Alternates, add to or subtract from base bid.

	GC	Plumbing	Htg. & Ventilating
Kawneer windows	+$12,574	.....	.....
Herman-Nelson unit vent & shelving	.....	.....	+$1,000
Windows:			
Valley wall	−$4,729	.....	.....
Hope	−5,864	.....	.....
Thorn	−15,286	.....	.....
Cabinets	−4,793	.....	.....
Blacktop drive & parking area	−4,915	.....	.....
Roughing & connections of counter top sinks	.....	−$900	.....
Cleaverbrooks boiler or burner	.....	.....	−$1,500

Unit prices for adjusting quantity variations are:

	Unit	GC	Heating
Excavation, earth	cy	$2.50	.....
rock	cy	30.00	$40.00
Conc footing	cy	80.00	.....
above top footing	cy	80.00	.....
Face brick walls, standard		72,000	.....
SCR face brick interior walls, auditorium only		11,800	.....

Principal construction features are:

Frame is complete concrete structure except for steel framing of auditorium and gymnasium.

Concrete floor and roof joists throughout, except steel deck over gym and auditorium.

All window areas floor to ceiling (Geyser).

Exterior columns at windows, square steel, concrete filled.

Exterior walls, brick with concrete block backup.

Full crawl space.

How Dodge saves you money by matching your truck to your needs

Dodge medium- and heavy-duty trucks have always been built from a wide range of "Job-Rated" components to match a truck exactly to your job. This means that you aren't forced to pay for capacity you don't need, and you don't get undersized units that shorten your truck's life. Just look at the range of components today's line of *Power Giants* offers:

In power, there are Sixes from 125 to 141 hp., Power-Dome V-8's from 204 to 234 hp. Exclusive Power-Dome V-8 design reduces harmful carbon deposits, greatly reducing the need for engine overhauls to maintain maximum power.

In payload, numerous Dodge medium- and heavy-duty models offer G.V.W.'s from 11,000 to 46,000 lbs., G.C.W.'s from 30,000 to 65,000 lbs. in gradual steps. A wide range of "Job-Rated" axles, transmissions, tires, springs and other components makes possible gradual increases in capacity and assures you a dependable, economical truck because it fits your job exactly.

In economy, Dodge provides the thriftiest and most efficient engine and transmission combinations. A range of eight engines and eight transmissions, including automatic Torqmatic, makes this possible. You save on gasoline, too, because Dodge engines operate efficiently on regular gasoline!

Priced competitively throughout the line, in many models Dodge is priced *lowest!* No matter what Dodge *Power Giant* your job calls for, you'll be agreeably surprised at its thrifty price tag. See your Dodge dealer soon, and get his special 40th-Anniversary deal!

DODGE *Power Giants*

From suspension towers to completion

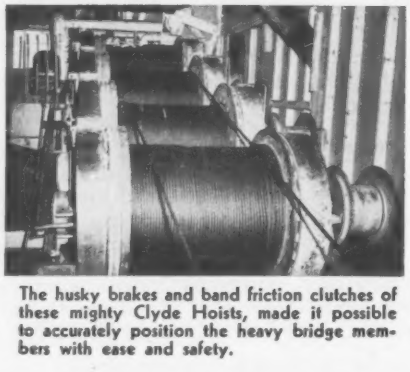
Clyde Hoists 'Pull' World's Longest Suspension Bridge Across Mackinac Straits

On the construction of the famous Mackinac Straits Bridge by American Bridge Division, United States Steel Corp., Clyde Hoists were used throughout the operation from erection of the suspension towers to completion of the bridge itself.

Time is big money on a project of this size. Any down time throws a monkey wrench into working schedules and makes costs climb rapidly. For dependable and continuous operation, leading contractors all over the world select Clyde Hoists. Their all steel bed and side frames provide exceptional ruggedness without excessive weight. Large diameter brakes and internal, expanding band friction clutches give smooth and positive load control. Anti-friction bearings throughout reduce maintenance . . . more advantages that owners and operators like in Clyde Hoists.

It takes a lot of features to add up to a superior quality, work-hungry hoist . . . one that will smoothly and swiftly spot loads with safety, without operator fatigue and without down time. All these and many other outstanding and exclusive features of Clyde Hoists are the result of the 60 years of engineering and manufacturing know-how that goes into every Clyde.

Powerful, 4-drum Clyde Hoists with 21,000 pound line pull operate the traveling derricks to set columns of the suspension towers on the Mackinac Straits Bridge job.



The husky brakes and band friction clutches of these mighty Clyde Hoists, made it possible to accurately position the heavy bridge members with ease and safety.

Write today for complete information on Clyde Hoists

CLYDE RIC REPUBLIC INDUSTRIAL CORPORATION

CLYDE IRON WORKS, Inc.

Established 1899

DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS
UNLOADERS : CAR PULLERS : ROLLERS

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Mar. 6; Next, Apr. 10
- Iron and Steel Products, Pipe: Last, Mar. 13; Next, Apr. 17
- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 20; Next, Apr. 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 27; Next, May 1

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	½"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag a	per M sf	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.00	$80.00	$2.00[5]	$75.00	.....	.....
Baltimore	51.25[f]	44.75[f]	33.50[f]	65.00[f]	65.00[f]	108.50[f]	69.00[f]	1.30	66.50	1.50	48.00	$4.00[g]	$33.50
Birmingham	73.00	60.00	47.77	75.00	65.00	136.50	81.00	1.40	70.00	1.60	78.00	3.30[g]	.....
Boston	60.00[m]	50.00[m]	36.00[m]	60.00[m]	55.00[m]	120.00[m]	79.00[k]	1.45	75.00	.....	65.00	5.30	52.50
Chicago	67.00	54.00	45.00	62.00	87.00	122.00	87.00	1.85	80.00	.....	63/65[l]	5.25[g]	.....
Cincinnati	48.00[w]	42.85[w]	32.05[w]	51.15[w]	70.00[w]	125.00[w]	73.50[w]	1.30	69.00	1.30	70.50	3.12[j]	30.00
Cleveland	62.00	56.50	41.50	65.00	75.00	125.00	80.00	1.35/1.50	80.00	.....	55.00[o]	29.00[s]	60.00
Dallas	55.00	52.50	42.50	60.00	68.50	117.50	68.50	1.94	66.70	1.40	64.10	4.30[g]	.....
Denver	62.00	54.50	41.00	62.00	75.00	126.00	74.00	.....	71.00[u]	1.20[s]	60.00[u]	11.00[r]	21.00
Detroit	63.00	53.00	38.00	67.00	89.50	90.00	89.00	.....	.....	1.90[5]	88.00	.....	.....
Kansas City	65.00	55.00	40.00	.....	72.00	115.00	75.00	1.40	75.00	2.00	75.00	4.11[d]	.....[dy]
Los Angeles	64.00	59.00	0.32[5][x]	63.50	75.00	125.00	80.00	.....	83.00	1.35[5]	64.00	4.40[g]	.....
Minneapolis	75.00	65.00	0.40[x]	80.00	75.00	140.00	78.00	2.00	80.00	1.80	80.00	5.50	.....
Montreal	56.00	47.40	36/39	53.00	63.25	.....	63.00	1.50	66.00	1.60	66.00	9.00[g]	80.00
New Orleans	57.00	48.00	45.00	60.00	75.00	128.00	73.50	1.75	85.00[o]	.....	.....	.....	.....
New York	52.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55[5]	68.50	1.55[5]	68.50	4.35[5]	32.50[z]
Philadelphia	50/55	48/53	34/40	49/54	68/73	105/110	55/65	.....	60/70	.....	70/75	5.00/6.34	40/50
Pittsburgh	70.00	65.00	40.00	.....	62.50	102.50	57.50	1.05[5]	55.00[5]	1.05[5]	55.00[5]	2.75[5]	38.50
St. Louis	65.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.65	70.00	4.50[5]	.....
San Francisco	57.00	48.00	0.35[5][x]	58.00	68.00	109.00	67.00	1.60	68.50	1.60	66.50	4.95	55.00
Seattle	68.30	51.65	51.05	65.00	74.50	125.00	73.50	1.60[z]	74.00	1.90[o][p]	80.00[o][q]	4.25	48.50
Toronto	55.00	47.00	38.00	64.50	75.00	.....	.....	1.50	65.00	.....	65.00	16.50[5]	46.00

[a] F.o.b. warehouse. [b] Semi thick. [c] 30# bag. [d] 12" to 24" width. [e] 40# kraft paper, 5 Msf, 100/500 rolls. [f] 20# sq ft bag, 4" thick. [g] Full trailer loads. [h] 80# kraft Paper backing. [i] LCL. [j] 40#. [k] 80#. [l] 2". [m] 10 ton quantities. [n] Distributor's siding. [o] Per Msf roll. [p] 32# bag. [q] 500 sf. [r] Per cwt. [s] 38# bag. [t] 28# bag. [u] Flame proof $75. [w] F.o.b. city. [x] Sq yd. [y] Temporarily off market

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Cons
Atlanta, R	$3.60	$2.95	$3.15+7½[ef]	$3.225	$3.125	$3.30+21½[ef]	$3.30+25[ef]	$1.60	$1.60
Baltimore	3.80+10½[ef]	3.20+7½[ef]	3.75+7½[ef]	3.80/3.95+10[ef]	3.45+7½[ef]	3.425+7½[eiii]	3.30+7½[ef]	2.05+7½[ef]	2.05+7½[ef]
Birmingham	3.65	2.85	3.25+10[ej]	2.65[r]	3.05	3.425	3.32+10[ej]	1.65	1.75
Boston	3.65+15[ef]	3.25+10[ef]	3.70+20[ef]	3.77½+10[ef]	3.65+20[ef]	3.55+12[ef]	3.20+10[ef]	2.45+7[ef]	2.35+7[ef]
Chicago	3.82½+7½[ef]	3.45+20[ef]	3.80+15[ef]	3.40+5[ef]	3.70+23[ef]	3.65+22[ef]	3.55+22[eoo]	2.77½+7½[ef]	2.77½+7½[ef]
Cincinnati	3.75	3.45	3.50+7½[ef]	3.225/3.475	3.50	3.67+4[eN]	3.65+9½[ej]	2.50	2.40
Cleveland	3.715+10[ej]	3.74	3.64+10[ej]	3.74	3.74	3.765	3.64+10[ef]	3.00	2.915
Dallas	3.775	3.10	3.175+7½[ej]	3.20/3.25	3.561½+10[ej]	3.25+7½[ej]	3.25+8½[ej]	1.62½	1.62½
Denver	3.75	3.20	3.175+7½[ef]	3.05	3.375+12½[ef]3.40[f]		3.40+15[ef]	2.17	2.17
Detroit	3.53+38[fR]	3.25+40[ef]	3.60+22½[eP]	3.20+20[ef]	3.58+34[ef]	3.65+34½[eC]	3.63+14[eB]	2.58+25[ef]	2.58+25[ef]
Kansas City	3.75	3.125	3.25	3.22	3.50	3.475[o]	3.40+9[eW]	2.255	2.305
Los Angeles	3.80+10[ef][h]	3.22½+20[ef]	3.625+10½[eR]	3.19+10[ef]	3.94+15[ef]	3.90[f]	3.70+28½[ej]	2.50+7½[ej]	2.50+7½[ej]
Minneapolis	3.575	3.15	3.32	3.10	3.25+23[ef]	3.25+36[ef]	3.215+20[ef]	2.40	2.55
New Orleans	3.425+5[ef]	2.90	3.20+7½[ej]	3.025+7½[ej]	2.985+5[ej]	3.375+7½[ej]	3.25+15[ej]	1.65	1.65
New York	4.25+37½[fr]	4.00+32½[hJ]	4.30+36[ej]	4.25+34½[ej]	4.15+52½[A]	3.90+43½[eF]	4.20+42½[hL]	2.90+23.2½[V]	2.90+23.2½[V]
Philadelphia	3.75+17[ej]	3.535	4.05+18½[M]	3.20½/3.95½+10[ej]	3.90+15[ej]	4.07½+16[ej]	4.00+16[ej]	2.25	2.55
Pittsburgh	3.95+17½[ej][m]	3.525+7½[ej]	3.80+10[ef]	3.64+10[ef]	3.575+17½[ej][m]	4.00+28[ef]	3.775+17½[ej][m]	2.325+17½[ej][m]	2.30+20[ef][f]
St. Louis	3.90+31½[c]	3.45+10[ej]	3.475+7½[ej]	3.55[r]	3.80+7½[ej]	3.83+29[ej]	3.83+20[ej]	2.50+10[ej]	2.50+10[ej]
San Francisco	3.95+52½[dd]	3.175+30[ef]	3.62½+10[ej]	3.205+10[ej]	3.69+30[ej][w][R]	3.785+26[ef][l]	3.70+46[ef][R]	2.505+10[ej]	2.505+10[ej]
Seattle	3.75+10[ef]	3.13+10[ef]	3.40+10[ef]	3.29+20[ej]	3.40+10[ef]	3.40+21½[eX]	3.62+23[eT]	2.70+10[ef]	2.70+10[ef]
Montreal	2.20+5[ej]	2.00+4[ej]	2.15+5[ej]	1.90+4[ej]	2.22+5[ej]	2.20+5[ej]	2.20+5[ej]	1.40+3[ej]	1.40+3[ej]
Toronto	2.76+11[ef]	2.50+10[ef]	2.55+7½[ef]	2.60+10[ef]	2.60+20[ef]	2.80+11[ef]	2.69+17[ef]	1.55+6[ef]	1.55+6[ef]

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.628. ENR Common Average $2.382.

*Revised, Atlanta Electrical workers.

[a] 6 hr day. [b] 7 hr. day. [c] 5% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. [d] H & WF. [e] 10¢ H & W, 10¢ VF. [f] 10¢ H & W, 10¢ PF, 10¢ VF. [g] $2.85 homes & housing plus 7½¢ WF. [h] WF, 5¢ VP, 5¢ HP. [i] 4% VF. [m] 7½¢ WF, 10¢ PF. [n] 2% V & Hol. 3% H & W, 1% PF. [o] 10¢ WF, 10¢ PF, [p] 3% WF, 3% PF + 10¢ in lieu of pd hol. [q] 10¢ WF 6% V & H, 3% PF. [r] 4% WF, 20¢ PF. [s] 5% W & PF, 4% VF, 1% NC, 1% JI, plus 6 PH. [t] Inc. 10¢ WF. [u] 10¢ WF, 1% PF, ½% apprent. [v] 1 drum; 2 drums, 2.80. [w] 15¢ WF, 15¢ VF. [x] 2% VF. [y] 10¢ H & W, 10¢ PF. [z] 10¢ WF, 5¢ HP. [A] 15¢ WF, 15¢ PF, 20¢ BF. [B] 7½¢ VP, 5¢ PF 1½¢ Ed. F. [C] 9¢ H & W & Ins., 7% V & H. [D] 10¢ H & WF, 5¢ indus. prom. [E] 6% WF, plus travel pay per day. [F] Plus $4 per day annuity contrib. [G] 10¢ WF, 10¢ VF, 3¢ prom. [H] 10¢ WF, 10¢ VP, 3% PF, 2% PH. [I] 15¢ H & WF, 5¢ advtg. [J] 5% WF, 6 PH, 3% PF. [K] 25¢ W & PF, 15¢ VF, plus 6¢ misc. [L] 3% WF, 3% PF, 3% VF, 1% Ed. F. [M] 10½¢ WF, 7½¢ PF. [N] 1% PF. [O] 10¢ WF, 1% NECA. [P] 10¢ H Ins., 7½¢ PF, 5¢ VF. [Q] 2 drums; 1 drum $2.85/3.00 + 10¢ WF [R] 10¢ H & WF, 2¢ admin. 1¢ apprent. [S] 10¢ H & WF, 15¢ PF. [T] H & W, VF. [U] 10¢ WF, 13¢ VF, 3¢ PF. [V] 4% WF, 4% PF. [W] 7½¢ WF, 1½¢ Ed. F. [X] 7½¢ WF, 14¢ VF. [aa] 7¢ WF, 15¢ PF. [bb] 8¢ WF, 2¢ advg. [dd] 17½¢ WF, 20¢ PF, 10¢ PH, 5¢ Jt Bd. [ff] 10¢ H & W, 8¢ PF. [gg] 10¢ ins. [hh] 7½¢ H & WF, 5¢ indus. prom [ii] 4% WF, 4% PF, 6 PH. [jj] 2%VF

	Truck drivers 1½ T	under 4 cy	over 4 cy	Tractor Operators Incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air hoist oper
Atlanta	$1.70	$1.80	$2.05	$2.70	$2.70	$2.70	$2.70	$3.225	$3.225	$2.70	$2.475	$1.77
Baltimore, R	2.00+7½[ef]	2.00+7½[ef]	2.10+7½[ehh]	3.40/3.55 +10[ef][ab]	3.40/3.55 +10[ef][ab]	3.40/3.55 +10[ef][ab]	3.40/3.55 +10[ef][ab]	3.80/3.95 +10[ef][ab]	3.80/3.95 +10[ef][ab]	3.40/3.55 +10[ef][ab]	2.85/3.06 +10[ef][ab]	2.10+7½[ge]
Birmingham	1.73	1.92[ff]	2.25[ee]	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.90
Boston	2.395[r]	.....[c]	.....[c]	3.275+10[ef][ad]	3.275+10[ef][ad]	3.275+10[ef][ad]	3.275+10[ef][ad]	3.65+10[ej]	3.65+10[ej]	3.275+10[ej]	3.20+10[ej]	2.60+7[eee]
Chicago	2.36+15[f][rR]	.....[c]	.....[c]	3.15+5[ej]	3.30+5[ej]	3.20+5[ej]	3.00+5[ej]	3.75+5[ej]	3.75+5[ej]	3.25+5[ej]	3.10+5[ej]	.....
Cincinnati	2.33[oo]	2.43[oo]	2.53[oo]	3.225	3.225	3.225	3.225	3.475	3.475	3.475	3.475	3.475
Cleveland	2.625+10[ej]	2.625+10[ej]	2.625+10[ej]	3.49	3.49	3.49	3.49	3.74	3.74	3.49	3.365	3.365
Dallas	1.625	1.625	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.625[l]	1.625/2.65[l]	1.775/2.00[l]
Denver	2.30	2.40	2.55	2.30	2.90	2.90	2.90	3.05	3.05	2.90	2.90	2.45
Detroit	2.61	2.61	2.61	3.50+10[ej]	3.50+10[ej]	3.50+10[ej]	3.50+10[ej]	3.50+10[ej]	3.50+10[ej]	3.50+10[ej]	3.225+10[ej]	2.71+25[eee]
Kansas City	2.23[m]	2.23[o]	2.305[p]	2.425	2.975[r]	2.975[r]	2.975[r]	3.22	3.22	2.835	2.975[r]	2.35
Los Angeles	2.63+10[ej]	2.63+10[ej]	2.83+10[ej]	3.47+10[ej]	3.47+10[ej]	3.47+10[ej]	3.56+10[ej]	3.56+10[ej]	3.56+10[ej]	3.56+10[ej]	2.74+10[ej]	2.71+7½[ej]
Minneapolis	2.40	2.40[g]	2.55[r]	2.93	3.15[r]	.....	3.15	3.37[v]	3.63[z]	2.93	2.82	2.53
New Orleans	1.80	2.05	2.05	2.375+8[ej]	3.025+7½[ej]	3.025+7½[ej]	3.025+7½[ej]	3.025+7½[ej]	3.025+7½[ej]	3.025+7½[ej]	2.375+7½[ej]	1.75
New York	2.21+22½[cc]	2.75+14[ehh]	2.75+14[ehh]	3.625+20[ek]	3.625+20[ek]	3.625+29[ek]	3.75+30[ek]	4.50+36[ek]	4.50+36[ek]	3.75+30[ek]	3.75+30[ek]	3.35+27[eee]
Philadelphia	—2.215/2.35+12½[ee]—			—3.20½/3.95½+10[ej]—			3.20½/3.95½ +10[ej]	—3.20½/3.95½+10[ej]—		3.20½/3.95½ +10[ej]	3.20+10[ej]	2.25+10[ej]
Pittsburgh	2.37+20[em]	2.51+20[em]	2.61+20[em]	3.44+10[ej]	3.44+10[ej]	3.44+10[ej]	3.44+10[ej]	3.64+10[ej]	3.64+10[ej]	3.64+10[ej]	3.15+10[ej]	2.30+20[em]
St. Louis	2.575+7½[eoo]	2.65+7½[ej]	2.65+7½[ej]	3.55[kk]	3.55[kk]	3.55[kk]	3.55[kk]	3.55[kk]	3.55[kk]	3.55[kk]	3.00[kk]	3.00[kk]
San Francisco	2.55+10[ej]	2.55+10[ej]	2.69+10[ej]	3.32+10[ej]	3.32+10[ej]	3.32+10[ej]	3.32+10[ej]	3.65+10[ej]	3.65+10[ej]	3.48+10[ej]	2.93+10[ej]	2.755+10[ej]
Seattle	2.87+17½[ej][dz]	2.87+17½[ej][dz]	3.07+17½[ej][eee]	3.26+20[ef][f]	3.26+20[ef][f]	3.26+20[ef][f]	3.26+20[ef][f]	3.63+20[ef][f]	3.63+20[ef][f]	3.35+20[ef][f]	2.99+20[ef][f]	2.90+10[ej]
Montreal	1.40+3[ef][f]	1.40+3[ef][f]	1.40+3[ef][f]	1.60+4[ef][f]	1.83+4[ef][f]	1.83+4[ef][f]	1.83+4[ef][f]	2.09+5[ef][f]	2.09+5[ef][f]	1.83+4[ef][f]	1.70+4[ef][f]	1.70+4[ef][f]
Toronto	1.60+6[ej][f]	1.60+6[ej][f]	1.60+6[ej][f]	2.00+8[ej][f]	2.10+8[ej][f]	2.10+8[ej][f]	2.10+8[ej][f]	2.60+10[ej][f]	2.60+10[ej][f]	2.10+8[ej][f]	2.15+9[ej][f]	2.15+9[ej][f]

[a] H & WF. [b] lower rates, straight time; other broken. [c] 2-axle; 10 wh. 3 axle $2.45; Euclid $2.65. [d] intermediate. [e] bldg contr.; highway $2.45+7¢ WF. [f] less than 2-T. [g] up 6 cy. [h] 4% WF, 4% PF. [i] 6-8 cy. [j] plus $2 pd by employer for hosp. death benefits to family. [k] bldg constr; steel contr $3.475. [l] higher rates are union, other taken from min. wage approved by County Comm. Court. [m] 10¢ H & W, 5¢ PF. [n] flatbed. [o] under 10 cy. [p] over 10 cy. [q] over 50 hp. [r] blade grader. [s] WF. [t] single. [u] incl. 10¢ H & W. [w] 7½¢ H & W. 5¢ PF. [x] 7½¢ WF, 10¢ PF. [y] to 3½ cy. [z] 3½ cy & over. [aa] plus W & PF [bb] 3% WF, 2% PF; plus 11 PH. [cc] 11¢ WF, 11½¢ PF, 11 PH. [dd] up to 5 cy. [ee] 5 cy & over. [ff] 1½ to 3 T. [gg] up to 5 T; 5 T & over, 2.25. [hh] 5¢ H & WF, 2½¢ PF. [ii] 4% VF [kk] Incl. 10¢ WF. [ll] Incl. 2% VF. [mm] 10¢ H & WF, 10¢ ins, 5¢ VP. [oo] Plus $2.25 wk. WF. [ss] 5% WF, plus 6 PH. [tt] 10¢ H & WF, 10¢ PF. [R] Revised.

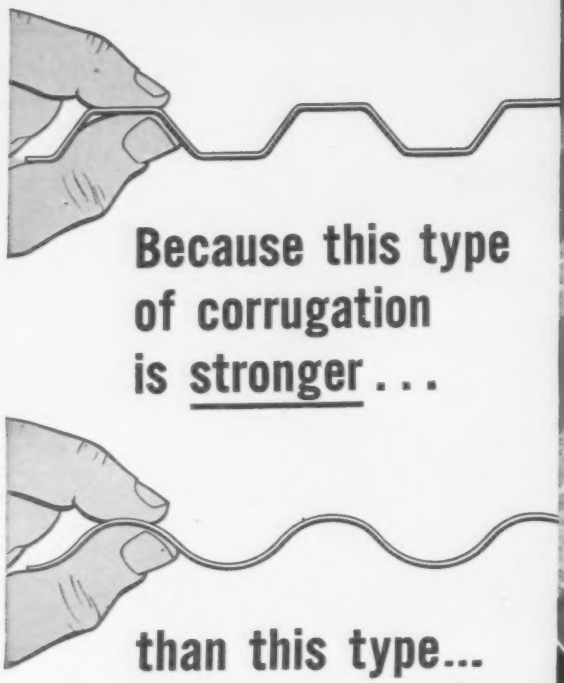
MEXICO CITY PRICES

Pesos, F.o.b. City		Fed. '58	Mar. '58
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.57	1.57
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.98	2.00
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	3.25	3.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.87	2.87
Struct. Iron Workers (8 hr. day)....Remachadores.	av. per hr.	4.38[R]	4.38[R]

Struct. Steel, Shapes		Feb. '58	Mar. '58
3"-15" x 12 meters	per metric ton	2300.00[#]	2300.00[#]
# fob Monterrey			
Reinf. Steel, Corrugated Rods			
½" x 11 meters	per ton	2100.00[R]	2100.00
⅝" x 11 meters	per ton	2100.00	2100.00
¾" x 11 meters	per ton	2000.00	2000.00
⅞" x 11 meters	per ton	2000.00	2000.00
1" x 11 meters	per ton	2000.00	2000.00
1¼" x 11 meters	per ton	2000.00	2000.00

Gravel truck load at 3½ cu. meters		Feb. '58	Mar. '58
Blue Gravel	per tr. load	75.00	75.00
Rose Gravel	per tr. load	65.00	65.00
Cement, Std. Port. (Tolteca)	per ton	240.00	240.00
Lumber			
1" Pine	per M ft.	1700.00	1700.00
1½" Pine	per M ft.	1900.00	1900.00

[R] revised



Because this type of corrugation is stronger . . .

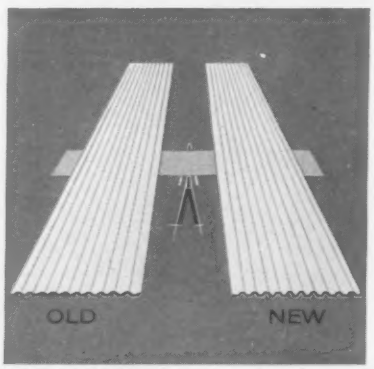
than this type...

STANDARD CORRUFORM, for floor spans up to 3½ feet, is available lengths

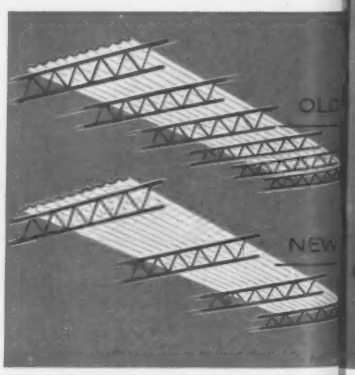
Granco brings you a new Co

A totally new steel centering! A striking new angular pattern! Corruform looks stronger. Corruform *is* stronger! Granco has re-designed it to increase sheet strength 50 percent. *Yet, there's no increase in price!* Here's what this means to you: A stronger steel base for concrete floor slabs means safer construction . . . savings in framing and concrete . . . easier-to-finish floors . . faster job completion. You stay on schedule! Tenants mo in sooner! Today, "new pattern" Corruform is available fr coast to coast. For more information, consult your near Granco district office, or mail the coupon at lower rig

STRONGER. Corruform is 100,000-psi tough-temper steel with section modulus increased 50 percent. In place, it provides a safer work platform and a tighter solid base for concrete.



SAME WEIGHT. New Corruform strength results from *better design.* No increase in weight means no increase in price! Lightweight Corruform sheets are easy to handle.

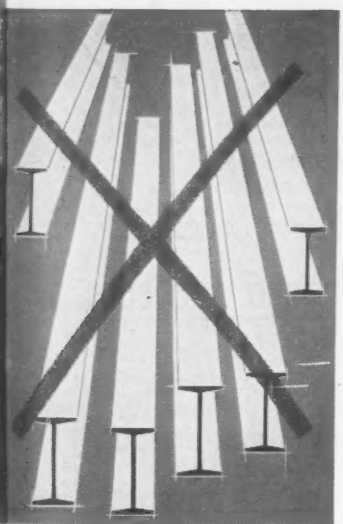


LESS FRAMING. Stronger sheets require support, fewer joists. Result: More econo per floor. Rigid Corruform permits slab be cast and finished in one easy operati

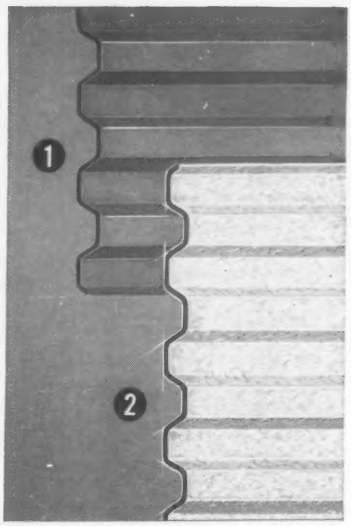
CUTS CO Wide sele special le rigid shee

lengths up to 12 feet 3 inches. For spans from 3½ feet to 5 feet, *HEAVY-DUTY CORRUFORM* is available in lengths up to 18 feet 4 inches.

Corruform® base for floor slabs



CUTS COST. Corruform reduces framing. Wide selection of gages and standard or special lengths minimize end laps. Strong rigid sheets won't sag, save concrete.



TWO FINISHES. 1. Uncoated Corruform for unexposed application with suspended ceilings. 2. Galvanized Corruform for exposed ceilings—needs no field painting.

See our new catalogs in Sweets!

GRANCO®

GRANCO STEEL PRODUCTS COMPANY
6506 N. BROADWAY, ST. LOUIS 15, MO.

A Subsidiary of
GRANITE CITY STEEL CO.
Granite City, Illinois
Granco Distributors in 86 Principal Cities

SINCE GRANITE CITY STEEL 1878 ®

Free Corruform Product Manual!

Contains description, advantages, uses, specifications, details and selection data on "new pattern" Corruform. Mail coupon to Granco address shown above. Attention: Dept. E-85.

Name_____

Firm_____

Address_____

City_____ State_____

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
I. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—LB & CA

▲ **G. L. Rugo & Sons, Inc.**, 80 Boylston St., Boston, Mass., CA $2,057,500, Central Catholic HIGH SCHOOL and CONVENT, North Peabody, PEABODY, MASS. R. C. Diocese Boston, Chancery Office, 1 Lake St., Brighton, Mass. Bids Mar. 18. CD 3/6.

▲ **John Capobianco**, 101 Tremont St., Boston, Mass., CA $1,899,000, HOSPITAL WING, Whitewell St., QUINCY, MASS. City, Hospital Dpt., City Hall, Quincy, Mass. Bids Dec. 20. CD 12/26, under LB.

MIDDLE ATLANTIC

BUILDINGS—LB & CA

▲ **John Tester & Son, Inc.**, Box L-144, Clinton, Md., CA $2,095,135, constr. SCHOOL BLDGS., Military Rd., Oregon Ave. and 27th St. N. W. for St. John's College, WASH, D. C. St. John's College High School, 1225 Vermont Ave. N. W., Wash., D. C. Bids Mar. 13, awarded Mar. 21. CD 3/17, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Louisiana**—TUNNEL—BA 4/23—State Hy. Dpt., R. B. Richardson, dir., Hy. Bldg. No. 3, Baton Rouge, Intracoastal Waterway Tunnel, open ramps, service road 0.621 mi. and related work, Rte. LA 3040, Houma, SP No. 65-30-01, Terrebonne Parish, $4,000,000. Plans deposit $41. CD 6/26/50, under LA., Houma.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA**—State Hy. Dpt., C. R. McMillian, ch. hy. engr., Hotel Columbia, Columbia, Bids opened 3/18,

S. C.—**Cherokee, Inc.**, Sumter Hy., Columbia, S. C. LB $1,524,267 (8 bidders), c. conc. surf. 7.877 mi. US Rte. 276 from US Rte. 221 to Interstate Rte. 26 for construction of four-lane divided hy., S. C. Docket No. 30.367 F. A. Project No. F-2611 (4), Laurens Co.;

S. C.—**Clement Bros. Co.**, Lenoir, N. C., LB $2,186,548, (8 bidders), macadam base course and b. conc. surf. 9.057 mi. Interstate Route 26 for constr. of four-lane divided hy. from Road 48 to Route 773, S. C. Dockets Nos. 32.401 and 36.321-F. A. Projects Nos. I-304-2(17) and I-302-2(20), Lexington and Newberry Counties.

BUILDINGS—LB & CA

▲ **Jehle Bros., Inc.**, 1616 Mt. Meigs Rds., Montgomery Ala. CA $3,500,000 SHOPPING CENTER, Government St. Exten. MOBILE, ALA. Springdale Plaza, Inc., c/o contractor.

MIDDLE WEST

BUILDINGS—BA

▲ **Ind., Gary**—LABORATORIES AND OFFICE—BA 4/18—U. S. Steel Corp., 525 Wm. Penn Place, Pittsburgh, Pa., metallurgical laboratories and office bldg. $2,000,000. Beine Hall & Curran, 607 Broadway, archts. CD 12/16.

BUILDINGS—SLC

▲ **Wis., Milwaukee**—HOTEL—A. Hurwitz, et al, 1744 N. Farwell Ave., soon lets contract hotel. $2,000,000. Rosen & Horowitz, 53 W. Jackson Blvd., Chicago, Ill. and Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., archts. CD 3/4.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,

O.—**C. F. Replogle Co.**, 122½ N. Court St., Circleville, O., CA $2,400,510, est. $2,774,200 (8 bidders) 2.719 mi. USR 40-20.14, ACI 610 (2), Type T-71, and structures, Belmont Co.;

O.—**John R. Jurgensen Co.**, 3535 Roundbottom Rd., Cincinnati, O., BA $2,449,374, est. $2,827,200 (8 bidders) 5.944 mi. SR. 1-3.44, ACI-1105 (35) Type T-35 and structures, Delaware Co.;

O.—**W. L. Johnson Constr. Co. & Assocs.**, P.O. Box 6668 Bexley Station, Columbus, O., CA $1,311,221, est. $1,325,600, 3.898 mi. USR 33-7.43, F-1091 (2) Type T-71 and structures, Fairfield Co.;

O.—**Henry Miesz Excavating Co., Inc.**, 2400 Kinsman Rd., Cleveland, O., CA $552,426, est. $615,800 (11 bidders) 5.338 mi. SR 14-12.73, Type T-35, Portage Co. Grand total $6,713,530. Bids Mar. 4. CD 3/14.

▲ **Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O., LB $3,496,857 (7 bidders) low service pumping station intake and tunnel under river, foundation work for station, intake pier on Kentucky side of river, CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Mar. 19. CD 3/3.

BUILDINGS—LB & CA

▲ **Barrington Woods, Inc.**, 114 W. Liberty St., Barrington, Ill. Owner Builds. $4,750,000, 190 HOMES, sewage-water facilities and paving near BARRINGTON, ILL.

▲ **Arthur G. McKee & Co.**, 2300 Chester, Cleveland, O., CA $2,447,269, ORE HANDLING and STORAGE YARD, CHICAGO, ILL. Interlake Iron Corp., 10730 Burley Ave., Chicago, Ill. J. Meissner, 300 W. Washington St., Chicago, Ill., archt. CD 10/2.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Mo., Columbia**—HOSPITAL—BA 4/16—At Daniel Boone Hotel, Columbia, 6 story, bsmnt., brick, steel, concrete, etc. hospital addn. for Boone Co. Hospital, Bd. Trustees, Charles H. Trimble, chn., Columbia, Mo. $3,000,000. O. W. Stigemeyer, 3 Sheraton Dr., St. Louis County, Zone 24, archt. (Correction—bid date). CD 3/17.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH DAKOTA**—State Dpt. Hys., Pierre, Bids opened 3/18,

S. D.—**G. H. Lindekugel & Sons**, Mitchell, S. D. LB $2,771,901 (11 bidders) grading, subbase, etc. 15.334 mi. Projs. I 093-2 (1) and F 016-5 (1), Lincoln Co.; LB $694,618 (8 bidders) c. conc. 2.308 mi. Proj. F 030 4 (1) Beadle Co. CD 3/6.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 3/19,

Tex.—**Flenniken Constr. Co.**, P. O. Box 634, Shreveport, La. LB $1,202,009, concrete 11.876 mi. Hy. US 82, Proj. U 595 (20), U 549 (9) & F 549 (10), Cooke Co. CD 2/26.

Tex.—**E. E. Hood & Son & Ward Constr. Co.**, P. O. Box 6097, San Antonio, Tex. LB $864,114, flex. base and two crs. surf. 23.775 mi., Hy. SH 44, Proj. S 2266 (1), Duval Co. CD 2/26.

BUILDINGS—LB & CA

▲ **Power Service Corp.**, 711 Wesley Temple Bldg., Minneapolis, Minn., CA $2,000,000, constr. 53,000 kw ELECTRIC GENERATOR PLANT, Addn. to power plant and Hoot Lake Station, FERGUS FALLS, MINN. Otter Tail Power Co., Fergus Falls, Minn. Bids Feb. 15. CD 3/18, under LB.

▲ **Watson Constr. Co.**, 1409 Willow St., Minneapolis, Minn. CA $4,298,000, general contract 6 story, steel frame, 44,884 sq. ft. on each floor, STATE OFFICE BLDG., incl. 3 penthouses, Capitol Grounds, Cedar St. between Central and Columbus Aves., ST. PAUL, MINN. State, Dpt. Admin., A. O. Vessey, dir. Procurement, 19 State Capitol, St. Paul, Minn. Bids Mar. 6. Grand total $5,650,649, CD 3/13, under LB;
Batzli Electric Co., 710 University Ave., St. Paul, Minn., CA $587,899, electrical work (St. Paul, Minn.);
Grudem Bros. Co., 635 North Prior Ave., St. Paul, Minn., CA $764,750, mechanical work (St. Paul, Minn.)

▲ **Western-Knapp Engineering Co.**, 650 5 Ave., San Francisco, Calif., CA $3,500,000, design and constr. URANIUM PROCESSING MILL, RIVERTON, WYO., Fremont Minerals, Inc., Riverton, Wyo. CD 12/24.

FAR WEST

BUILDINGS—BA

▲ **Calif., Long Beach**—HOSPITAL—BA 5/7—City, City Hall, 5 story Long Beach Memorial Hospital. $5,000,000. CD 5/7/56.

HEAVY CONSTRUCTION—LB & CA

▲ **English Electric Co.**, 23 Beaver St., New York, N. Y. CA $5,500,000, two 83,000 kva turbines for Priest Rapids Dam, WASHINGTON. Grant County Public Utility Dist., Ephrata, Wash. Harza Eng. Co., 400 W. Madison St., Chicago, Ill., engrs. CD 11/4/54.

▲† **Alwood Corp.**, 203 E. Broadway, Glendale, Calif. LB $2,136,797 (8 bidders) imprv. Big Dalton Wash Channel, San Dimas Wash to Los Angeles St., ENG-04-353-58-14, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 20. CD 2/26.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Madonna Constr. Co., P. O. Box 910, San Luis Obispo, Calif. CA $3,267,177 relocation 8 mi. hy. due to constr. Twitchell Dam on Cuyama River, incl. 1,659 ft. bridge over Huasna River and 2 shorter bridges over Cuyama River and Alamo Creek on State Sign Rte. 166, Cuyama Hy., San Luis Obispo and Santa Barbara Counties. Bids Mar. 5, awarded Mar. 19. CD 3/7, under LB.

▲† **Baldwin Contg. Co., Campbell Constr. Co. & Erickson Constr. Co.**, P.O. Box 311, Marysville, Calif. LB $2,245,900 (12 bidders) joint venture, addnl. ammunition storage at U. S. Naval Ammunition Depot, NBy 9449, CONCORD, CALIF. Dpt. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids Mar. 19. CD 3/3.

BUILDINGS—LB & CA

▲ **Pacific Coast Builders**, 1 South Park, San Francisco, Calif. CA $2,436,800 Cherryland HIGH SCHOOL, HAYWARD, CALIF. Hayward Union High School Dist., c/o Supt., 22300 Foothill Blvd., Hayward, Calif. Bids Feb. 19, awarded Mar. 20. CD 2/27, under LB.

▲† **Swinerton & Walberg**, 200 Bush St., San Francisco, Calif. CA Est. $13,000,000, 8 story, bsmnt., 550,000 sq. ft. and framed for 5 addnl. floors new BANK SERVICE BLDG. Market St. between 11th St. and Van Ness Ave., SAN FRANCISCO, CALIF. Bank of America, 300 Montgomery St., San Francisco, Calif. CD 11/15.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲† **Interamericana De Estudios Y Empress S.A.**, Panama; LB $2,918,290 (6 bidders), public roads Inter-American Hy. Proj. 19, grading, etc., PANAMA. Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Program, Wash., D. C. CD 1/23.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Que., Three Rivers**—City, City Hall, 12 m.g.p.d. filtration plant near Terrain de Golfe and St. Maurice River $2,808,000. Langlois, Moreau & Chenevert, 128 Radisson St., consult. engrs. Bids soon. CD 9/1/55.

SEWERS, WASTE DISPOSAL

▲ **Ind., Evansville**—City, City Hall, addn. to East Side Sewage Treatment Plant, and sewers, $3,150,000, Consoer, Townsend & Assocs., 360 East Grand Ave., Chicago 11, Ill., consult. engrs. CD 6/16/49.

BRIDGES

▲ **CALIFORNIA**—State Dpt. P. Wks. Div. Hys., 1120 N. St., Sacramento,

San Francisco and Alameda Counties—remodeling San Francisco-Oakland Bay Bridge, incl. strengthening

(Continued on page 94)

Can't stop drilling...

with the Le Roi shock-absorbing drill

There's no stopping your operators once they get their hands on the new Le Roi Models H10, H111, and H12 rock drills. And you can't blame them.

Thanks to the new torsion rubber-cushioned grip which absorbs 55% of the bone-rattling vibration, the new drills purr like a kitten at the handle, kick like a mule at the bit. The results: unmatched operator comfort, better morale, and greater production. Operators last longer and *stay longer, too.*

Give your operators the drill of their lives — ask your local Le Roi distributor for a demonstration. Or write for more information to the Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

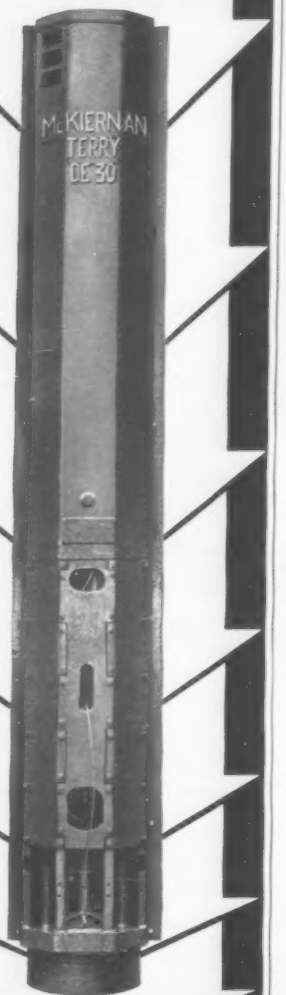
AT-713

LE ROI
NEWMATIC
AIR TOOLS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

DIESEL PILE HAMMERS

are self contained — no steam — no air — a small quantity of fuel oil for all-day operation — high driving rate — simple design — easy to maintain — write for Bulletin 67R.



McKIERNAN-TERRY CORP.
80 RICHARDS AVE., DOVER, N. J.

(Continued from page 92)

upper deck, paving, remodeling train terminal for buses and new approaches. $35,000,000.

▲ **Wash., Tacoma**—City, City Hall, voted bonds Mar. 11, bridge on Yakima Ave. across Wakefield Dr., $2,000,000; replace M St. bridge, $200,000. CD 1/21.

STREETS AND ROADS

▲ **Ala., Huntsville**—City Hall, street imprvs. $2,000,000.

▲ **NEW YORK**—State Dpt. P. Wks., Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,

Westchester and Putnam Counties—reconstr. 10 mi. Rte. 22 between Goldens Bridge in Westchester Co. and Rte. 6 east Brewster in Putnam Co. to four-lane highway largely on new location, FAI $3,000,000.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Berks Co.—Rte. 422 by-pass for city of Reading skirting city on south. 4-lane divided limited access hy. $8,000,000, Bids in September.

Somerset and Cambria Counties—constr. Windbur-by-pass for T. R. 56 as 4 lane divided hy., $2,772,000. R. A. Farley, c/o owner, ch. engr.

EARTHWORK, WATERWAYS

▲ **Washington**—Douglas County P. Utilities Dist., East Wenatchee, hydro electric dam on Columbia River near Wells, $116,000,000, Puget Sound Power & Light Co. of Seattle will finance feasibility study. Bechtel Corp., 220 Bush St., San Francisco, Calif., consult. engrs. CD 2/14/55.

AIRPORTS

▲† **Pa., Middletown**—DEPOT OPERATIONS—U. S. Eng., 24th St. and Maryland Ave., Baltimore 18, Md., plans by Lawrie & Greene, 321 N. Front St., Harrisburg, 3 story depot operations bldg. Olmsted Air Force Base. $1,000,000,-$3,000,000. Bids in April. CD 9/17, under Public Bldgs.

▲ **Wash., Spokane**—RUNWAYS, etc.—City, City Hall, defeated $4,260,000 bonds Mar. 11, 2 addnl. runways, at air terminal bldg., aircraft parking and loading apron, taxiways, water mains, sewers, etc., at Geiger Field Municipal Airport. CD 1/31.

PUBLIC BUILDINGS

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St.,

plans by Adrian Wilson & Assoc., Architects Bldg., 816 W. 5th St., high school, Sunset Blvd. between Medio and Haverford Sts., Pacific Palisades, $4,000,000

plans by Roy. W. Donley, 8320 Melrose Ave., frame and stucco Justice St. School, Strathern St. west of Woodlake Ave., West San Fernando, $467,000.

plans by Armand Monaco, 3021 Waverly Dr., Los Angeles frame and stucco Sharp Ave. School, Sharp Ave. and Pierce St., Pacoima, $580,000.

plans by Kegley, Westphall & Arbogast, 800 S. Robertson Blvd., Los Angeles, Superior St. School, Lassen St. and Mason Ave., San Fernando, $540,000.

plans by R. Leon Elgar, 13111 Ventura Blvd., Studio City, concrete block Tribune St. School at Tribune St. and Etiwanda Ave., Granada Hills, $467,000.

plans by H. W. Frank, 9019 Beverly Blvd., Los Angeles, frame, stucco Wilbur Ave. School Wells Dr. South of Tarzana School, San Fernando, $467,000.

plans by Mathew Lapota & Assoc., 470 S. San Vicente Blvd., Los Angeles, frame, stucco Napa St. School, 18955 Chase St., Northridge, $483,000.

plans by Carleton M. Winslow, 9304 Santa Monica Blvd., Los Angeles, frame, stucco Herrick Ave. School, Herrick Ave. between Rossford and Cobalt St. Sylmar, $525,000.

plans by A. R. Street, 251 S. Robertson Blvd., Beverly Hills, Capistrana Ave., School 8011 Sausalito Ave., Canoga Park $540,000, CD 4/8/55.

▲ **Calif., Mountain View**—HOSPITAL—El Camino Hospital Dist., c/o Bd. Dirs., 673 Carolina St., Sunnyvale, plans by Stone, Mulloy, Marraccini & Patterson, 619 California St., San Francisco, 4 floors, bsmnt., and roughed in 5th floor hospital, Grant Rd. $7,260,-000. CD 6/18, under Calif., Sunnyvale.

▲ **Ind., Bloomington**—SCHOOL—Metropolitan School Bd., 441 S. College Ave., plans by Ralph Legeman & Assocs., 10 Chestnut St., Evansville, 2 junior high Schools, 17th and Maple and S. of E. 2nd St. $2,000,000. CD 5/9.

▲† **Mass., Chicopee Falls**—HOUSING—Contracting Officer, Offutt Air Force Base, Omaha, Neb., plans by Anderson, Nichols & Co., 150 Causeway St., Boston, and Samuel Glaser & Assoc., 234 Clarendon St., Boston, Housing (305 units) Westover Air Force Base. $5,000,000. CD 5/7/56.

▲ **Mich., Highland Park**—SCHOOL—City, $15,000,000 bond election Apr. 8, school constr.

▲ **N. Y., Kings Park**—SCHOOLS—Bd. Educ., Kings Park, plans by George J. Dippell, 123 Merrick Rd., Massapequa, two 25 room elementary schools. $2,-000,000.

▲ **O., Cleveland**—MUNICIPAL COURT—City, City Hall, Zone 14, bond election Nov. 4, Municipal Courts Bldg., E. 18th and Payne Ave. $4,500,000. CD 11/9/56.

▲ **O., Willoughby**—HOSPITAL—Comrs. Lake Co. Court House, Painesville, plans by The Ellerbe Co., E. First National Bank Bldg., St. Paul, Minn., Hospital, west end of Lake Co. $3,500,000. Bids this fall.

▲† **Ore., Corvallis**—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., 150 houses for military personnel, under Capehart Act. $2,500,000. Work to start this summer.

▲ **Wash., Everett**—SCHOOL—School Dist. No. 2, Everett, voted $1,800,000 bonds Mar. 11, and 10-mill special levy to raise an addnl. $600,000, high school, $2,173,879, CD 1/7.

▲ **Wash., Tacoma**—SCHOOL—School Dist. No. 1, S. 8th and Tacoma Sts., Tacoma, voted $2,813,000 bonds Mar. 11, high school in South Tacoma near S. 66 St. and S. Tacoma Way, $2,250,000, R. B. Price, 2905 A St., archt. CD 1/27.

▲ **Que., Montreal**—DIAGNOSTIC CENTERS—Provincial Health Dpt., Parliament Bldgs., Quebec City, Que., Diagnostic Centre at University of Montreal, or at north end of city. $2,500,000. (Amount of $500,000 will be spent this year on initial constr.)

COMMERCIAL BUILDINGS

▲ **Calif., Daly City** — SHOPPING CENTER — McKeon Constr. Co., Builder, 3300 Junipero Serra Blvd., plans by Angus McSweeney, 612 Howard St., San Francisco, 175,000 sq. ft. shopping center, 50 stores and parking area on west side of Junipero Serra and old San Pedro Rd. $25,000,000.

▲ **Ill., Des Plaines**—HOTEL—O'Hare Chicago Corp., c/o Milton K. Joseph, 134 N LaSalle St, Chicago, plans by Arthur Swanson, 41 E. Oak St., Chicago, 2 story, O'Hare Chicago Hotel, swimming pool, NW corner Higgins and Mannheim Rds. near here. $5,000,000.

▲ **Kan., Wichita**—OFFICE—Dist. 70, International Assoc. of Machinists AFL-CIO, 221 N. Market St., plans by Glenn E. Benedick, 254 Laura Ave., 9 story brick, precast stone native granite, window-wall type constr. office bldg., 131 West Central St. $2,000,000.

▲ **Mass., Lexington** — SHOPPING CENTER — William Filenes Sons Co., 426 Washington St., Boston, plans by Shurcliff, Shurcliff & Merrill, landscape archts., 14 Beacon St., Boston, and Raymond Loewy Assocs., designers, 488 Madison Ave., New York, N. Y., shopping center, incl. shops, restaurants, theatres, bank, post office, etc., Junction Rts. No. 2 and 128. $7,500,000, Constr. 1958.

▲ **N. J., Danville**—HOSPITAL—Archdiocese of Paterson, 24 DeGrasse Place, Paterson, and St. Clare's Hospital, Pocono Rd., Denville, expansion of St. Clare's Hospital. $2,000,000.

▲ **N. Y., Brooklyn**—DORMITORY—Long Island University, 385 Flatbush Ave. Exten, plans by S. J. Kessler & Sons, 551 5 Ave., New York, 16 story dormitory, Fleet and Willoughby Sts. $3,300,000.

▲ **N. Y., Greenburgh**—HOTEL—Syndicate, c/o Paul Trapani, archt., 640 Burke Ave., New York, Zone 67, 3 story hotel. $2,000,000.

▲ **O., Canton**—SHOPPING CENTER—Beacon Investment & Management Co., c/o Paul Christoff, 2nd National Bank Bldg., Akron, 180,000 sq. ft. brick, steel, concrete block, 30 unit shopping center, 12th St. and Whipple Rd., N. W. $2,500,000-$3,000,000.

▲ **O., Xenia**—HOUSING, etc.—Grant-Holladay Constr. Co., Callahan Bldg., Dayton, 1,000 homes and shopping center, on 500-acre site on Indian Ripple Road, $2,000,000.

▲ **Utah, Ogden**—HOSPITAL—Latter Day Saints Hospital, 47 E. South Temple, Salt Lake City, plans by Keith W. Wilcox, 427 Keisel Bldg., Ogden, hospital, Harrison Blvd. $5,000,000. CD 2/20.

▲ **Wis., Milwaukee**—HOSPITAL—St. Josephs Hospital, 5000 W. Burleigh St., plans by Ralph P. Ranft, 3606 Gravois Ave., St. Louis, Mo., 4 and 6 story hospital addn. $2,000,000-$3,000,000.

INDUSTRIAL BUILDINGS

▲ **Ariz., Phoenix**—PLANT—General Electric Co., Computer Dpt., 840 S. Canal St., Chicago, Ill. plans by Daniel Mann Johnson & Mendenhall, archts.-consult. engrs., 3325 Wilshire Blvd., Los Angeles, Calif. 2 story, 104,000 sq. ft. concrete, brick plant. Black Canyon Hy. south of Thunderbolt Rd. $3,000,000. CD 3/17.

▲ **Kan., Hill City**—PLANT—Central Kansas Power Co., Ross Beach, gen. mgr., 111 E. 11 St., Hays, 22,000 kw, power generating plant near here. $5,675,000. Sunflower Electric Co-operative, Wakeeney, Kan., lessee.

▲ **N. Y., Schenectady**—FOUNDRY—General Electric Co., River Rd., 95,000 sq. ft. steel casting foundry. $3,700,000.

▲ **O., Crestline**—FACTORY—Pittsburgh Plate Glass Co., 420 Fort Duquesne Blvd., Pottsburgh, Pa., 275,000 sq. ft. glass factory to temper automobile glass, on 48-acre site, along Pennsylvania RR., 1½ miles east of here. $3,000,000.

▲ **Ore., Portland**—FREIGHT TERMINAL—Union Pacific R. R. Co., 11 S. La Salle St., Chicago 3, Ill., 1,000 ft. x 170 ft. freight station with 150 x 160 ft. office, Albina Yards, here. $2,000,000. J. A. Bunjer, 1416 Dodge St., Omaha, Neb., engr. Leo Daly, 633 Insurance Bldg., Omaha, Neb., consult. engr.

▲ **Alta., Edmonton**—STEEL MILL EXPANSION—Premier Steel Mills Ltd. (Alberta Rolling Mills Ltd.) 507 Pace d'Armes, Montreal, Que., scrap melting facilities, iron ore development, large structurals production and plate and skelp mills at steel plant, here. $15,000,000. J. L. Miller, 2256 W. 12th Ave., Vancouver, B. C., consult. engr. CD 5/8/56.

UNCLASSIFIED

▲ **Del., Wilmington**—GRAND STAND, etc.—Delaware Park Racetrack, Delaware Park Station, plans by W. Ellis Preston, 903 Jefferson St., altering grand stand and clubhouse, Delaware Race Track, $2,500,-000.

▲ **Pa., Harrisburg**—EXHIBITION BLDG.—Pa. Farm Show Comn., Farm Show Bldg., Harrisburg, 3 story bldg. as addn. to Farm Show Exhibition group, 11th and Maclay Sts. $2,000,000.

Beechcrafts for '58 — FINEST Business Planes Built!

The eight-place *Beechcraft* Super 18
RANGE....up to 1,626 miles nonstop
SPEED.....up to 234 miles per hour

The six-place *Beechcraft* Twin-Bonanza
RANGE.....up to 1,650 miles nonstop
SPEED.....up to 240 miles per hour

The four-place *Beechcraft* Travel Air
RANGE.....up to 1,410 miles nonstop
SPEED.....up to 209 miles per hour

The four-place *Beechcraft* Bonanza
RANGE....up to 1,060 miles nonstop
SPEED.....up to 210 miles per hour

BEECHCRAFT *invites* COMPARISON

Distinguished, beautiful, rugged, fast, comfortable, and full of travel benefits — Beechcraft's line of business airplanes for '58 offers discriminating executives more in profitable, efficient travel.

more **POWER**
more **SPEED**
more **COMFORT**
more **BEAUTY**
more **SAFETY**

The New BEECHCRAFT BONANZA with exclusive new fuel injection — delivers a smoother 200 miles per hour cruising speed... the fast, All New BEECHCRAFT TRAVEL AIR, the quietest plane in the skies — outstanding in the "light twin" field... the rugged and dependable New BEECHCRAFT TWIN-BONANZA with its fast, pilot-preferred performance... and the proud queen of the Air Fleet — the magnificent BEECHCRAFT SUPER 18 Sun Chaser — transcontinental mobility in the finest style in the skies!

Your Beechcraft distributor or dealer will be happy to demonstrate any of these airplanes and to explain the finest leasing and financing plans in aviation. Or write to Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Weldynamics

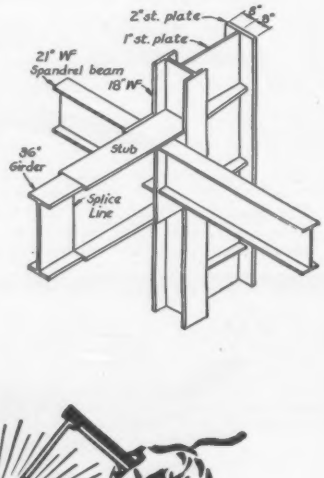
ARC WELDING AT WORK CUTTING COSTS

Weldynamics paves the way for new and better design

Creative ingenuity, made practical by Weldynamics, came forth with this 19 story building with a column free interior. All floors are suspended between 14 exterior columns. Thus the architect was able to provide more floor space free from obstruction.

The exterior columns are shop fabricated with automatic Lincolnweld submerged arc welding. Down-hand field welding is accomplished with Lincoln Jetweld LH-70, iron powder low-hydrogen electrodes for welding speed and economy.

The Inland Steel Company Building, Chicago, Illinois. Erected by John B. Beasley Construction Company; shop fabrication by Joseph T. Ryerson & Son, Inc.; General Contractor, Turner Construction Company; Architects, Skidmore, Owings and Merrill.



Typical column to which a stub support, part of a torque box, is welded.

ARCHITECTS! ENGINEERS! PUT WELDYNAMICS TO WORK ON YOUR STRUCTURES

Lincoln provides the aids to help you with your projects: "Procedure Handbook of Arc Welding Design and Practice". 1300 pages fully illustrated includes 466 pages devoted to Structural Design. $3.00 postpaid in U.S.A., $3.50 elsewhere. "Studies in Structural Arc Welding" sent free to architects and structural engineers. Write us!

The World's Largest Manufacturer of Arc Welding Equipment

© 1958 The Lincoln Electric Company

LINCOLN

THE LINCOLN ELECTRIC COMPANY, DEPT. 3438, CLEVELAND 17, OHIO

CONSTRUCTION REPORTS
Second Section

NEW ENGLAND

BUILDINGS—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 9 Vermont — April 10, 14 Connecticut

STREETS AND ROADS

April 8, 15, 22 Massachusetts — April 14 Connecticut

▲† Massachusetts—BA 4/22—U. S. Eng., 111 E. 16 St., New York 3, N. Y., Flood Control Proj. Hoosic River, Unit No. 4, North Adams, CIVENG-30-075-58-9. $1,500,000-$2,000,000. Plans deposit $20. Alexander Potter Assoc., 50 Church St., New York, N. Y., archts.-engrs. CD 9/9.

▲† Me., Limestone—AIR FORCE BASE IMPRVS.—BA 4/25—U. S. Eng., 150 Causeway St., Boston, Mass., surface water supply on Little Madawaska River, Loring Air Force Base, ENG-19-015-48-101. Bid date advanced. $1,500,000-$2,000,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 3/17.

▲† Me., Jonesport—VLF TRANSMITTER BLDG.—BA 5/1—Dist. P. Wks. Office, IND, 495 Summer St., Boston 10, Mass., VLF transmitter bldg., U. S. Naval Radio Station (T) Washington Co., NBy-12806, Spec. No. 12806/57. $1,000,000-$2,000,000. Plans deposit $85. CD 9/18.

BUILDINGS—BA

▲† Mass., Bedford—CHAPEL, etc.—BA 5/6—Veterans Admin., Munitions Bldg., Wash., D. C., buildings, utilities at Veterans Hospital. $1,500,000-$2,000,000. James H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 1/28.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 15 New Jersey — April 24 New York

STREETS AND ROADS

April 7 Delaware — April 10 New Jersey

April 15 Maryland — April 24 New York

▲ New York and New Jersey—BA On Or About 5/1—Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., furnish, install structural steel for lower level of George Washington Bridge. CD 8/15.

▲† N. Y., Rome—AIRPORT FACILITIES—BA On Or About 5/8—U. S. Eng., 111 E. 16 St., New York, Zone 3, apron and taxiway support facilities, Griffiss Air Force Base, ENG-30-075-58-209. $5,000,000-$6,000,000. Plans deposit $75. Extended date. Greenberg & Ames & William H. McFarland, 303 4th Ave., New York, N. Y., archts.-engrs. CD 3/20.

▲ New York—BA 5/6—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, constr. Waterways Work Section No. 1 and appurtenant works located in Niagara Falls, Niagara Co., Niagara Contr. No. N5, Spec. No. PA-N-23005. Plans deposit $50. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15.

▲ New York—BA 5/13—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, constr. Waterways Work Section No. 2 and appurtenant works located in Niagara and Niagara Falls, Niagara Co., Niagara Contr. No. N6, Spec. No. PA-N-23005. Plans deposit $50. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15.

▲ New York—BA 5/20—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, Zone 19, constr. Waterways Work Section No. 3 and appurtenant works in Lewiston and Niagara, Niagara Co., Niagara Contr. No. N7, Specifications No. PA-N-23005. Plans deposit $50. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15.

BUILDINGS—BA

▲ N. J., Newark—HOUSING IMPRVS.—BA 4/8—Housing Auth. of The City of Newark, 57 Sussex Ave., Contr. No. 5, electrical work; Contr. No. 6, electric elevators in connection with Housing Proj. N.J. 2-15. CD 3/25, under LB.

▲ N. Y., Watervliet—HOUSING—BA 4/22—City, brick municipal housing between 21 and 23 St. and Broadway and 2 Ave. $1,500,000. Plans deposit $50. Keis & Holroyd, 257 Broadway, Troy, engrs.-archts.

▲ N. J., Camden—HOSPITAL—BA 4/15—Cooper Hospital, 6th and Stevens Sts., 2 wing hospital addn., $2,000,000. Plans deposit $100. Horace B. Nicholson, 215 S. Broad St., Phila., Pa., engr. George Von Uffel, Jr., Haddonfield, archt. CD 3/14.

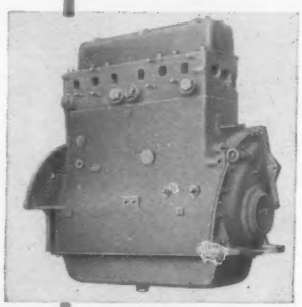
HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—State P. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany, Zara Contg. Co., Inc., Hicksville, N. Y., CA $2,236,736, wid'n., imprv. 7.14 mi. section Ocean Parkway beginning at Plaza just west of pavilion at Gilgo State Park and extending eastward to traffic circle at Cap-

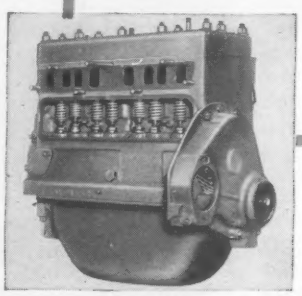
CONTINENTAL
"S" Assemblies Save Money in the CONSTRUCTION INDUSTRY

Good news for every user of construction equipment with Continental power! All models in the Continental line of industrial engines are now available in "S" Assembly form—basic engine unit complete with cylinder-and-block assembly, oil pan, cylinder head, piston and valve assemblies, crankshaft, camshaft, gear cover, bearings and caps, crank and cam gears and front end plate, fully assembled and torqued to specifications.

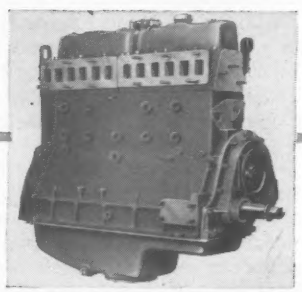
"S" Assemblies usually cost less than full overhaul, and they install in a fraction of overhaul time. And since the "S" Assembly embodies the latest results of Continental's continuing research, as regards both materials and design, it enables you to keep the very latest model on the job at all times.



DIESEL



L-HEAD



OVERHEAD VALVE

ASK YOUR EQUIPMENT DEALER ABOUT "S" ASSEMBLIES
OR WRITE THE FACTORY FOR INFORMATION

CONTINENTAL MOTORS — Powerful as the Nation — AMERICA'S STANDARD

Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.

tree State Park, existing two-lane hy. will be widened to four-lanes separated by variable width center mall, incl. also pedestrian underpass at Cedar Beach and improved facilities for access to beach areas along route, Suffolk Co. Bids Feb. 20. CD 2/25, under LB.

▲ **NEW YORK**—State P. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany,
Cayuga Foundation Cnrp., 30 Vesey St., New York 7, N. Y., CA **$1,057,483**, est. $1,103,000, placement rein.-con. pavement on deck of mile-long State Thruway bridge now under constr. across Hudson River, south Selkirk and Castleton, Albany and Rensselaer Counties. Bids Feb. 28. CD 3/4, under LB.

▲ **John H. Mathis Co.**, Point and Erie Sts., Camden, N. J., LB **$1,747,611** (4 bidders), Contr. No. 8, sludge vessel, Bowery Bay Pollution Control Proj. extension, Queens Boro, ASTORIA, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Mar. 21. CD 3/6.

▲ **Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., LB **$4,287,625** (3 bidders), sanitary sewers in Lynbrook, East Rockaway and Hewlett, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old County Court House, Mineola, N. Y. Bids Mar. 25. CD 3/10.

▲ **NEW JERSEY**—Comn. State Hy. Dpt., 1035 Parkway Ave., Trenton,
Charles F. Vachris, 9024 Ditmas Ave., Brooklyn 36, N. Y., CA **$1,501,358**, constr. bridges on 0.141 mi. Rte. 102, Section 2D, Rte. 28 (1927), Greenwich Church Rd. to relocated Rte. U.S. 22, Greenwich and Franklin Twps., Bloomsbury Borough, Fed. Proj. No. I-102-2 (11), Warren and Hunterdon Counties. Bids Mar. 4. CD 3/6, under LB.

▲ **Conduit & Foundation Corp.**, 158 N. 20th St., Phila., Pa. LB **$1,423,180** Torresdale filter plant, raw water conduits and appurtenances. Bid 2965, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Mar. 11. CD 2/11.

▲ **Case Constr. Co.**, Mount Airy, Md., LB **$1,050,703** (7 bidders), reconstr. Preston and Biddlet St. bridges and Fallsway structure Station 96.00 (Part of Jones Falls Expressway), BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Mar. 26. CD 3/12.

▲† **C. J. Langenfelder & Sons**, P. O. Box 5106, Baltimore, Md., LB **$1,712,598**. Item I, LB **$1,418,842** Item 2, (6 bidders), pavement repairs and Seaplane Ramp at U. S. Naval Air Station, NBy-11426, PATUXENT RIVER, MD. District P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids Mar. 19. CD 2/28.

▲† **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa., LB **$6,666,000** (10 bidders) excavation, foundation piles, and other items for foundations for addnl. office Bldg., for U. S. House of Representatives, WASH., D. C. Office of Architect of Capitol, U. S. Govt., U. S. Capitol, Wash., D. C. Bids Mar. 26. CD 3/24.

BUILDINGS—LB & CA

▲ **Atlantic Towers Apts.**, c/o George Miller, archt., 125 W. 45 St., New York 19, N. Y., Owner Builds. **$3,500,000**, 4 APARTMENTS for 500 families, Avenue Z and Sheepshead Bay Rd., BROOKLYN, N. Y.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., CA **$4,160,000**, general contract, constr. Northeast Queens HIGH SCHOOL, North Hempstead Turnpike, Utopia Parkway, 59 Ave. and Fresh Meadow Lane, FRESH MEADOWS, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Grand total $5,625,000 Bids Feb. 28. CD 3/4, under LB;
Meyerbank Elec. Co., 126 W. 32 St., New York 1, N. Y., CA **$814,000**, electrical work and lighting fixtures (Fresh Meadows, N. Y.);
Daniel J. Rice, Inc., 41-50 38 St., Long Island City, N. Y., CA **$651,000**, heating (Fresh Meadows, N. Y.)

▲ **Irving Domnitch**, c/o George G. Miller, archt., 125 W. 45 St., New York 19, N. Y., Owner Builds. **$4,500,000**, two APARTMENT BUILDINGS for 600 families, JACKSON HEIGHTS, N. Y.

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N. Y., LB **$3,674,000** (8 bidders), general contract HIGH SCHOOL of INDUSTRIAL ARTS and Public School 59 west side of Second Ave. between 56 and 57 Sts., Manhattan Boro, NEW YORK, N. Y. Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City 1, N. Y. Bids Mar. 26. CD 2/27;
Novak & Co. Inc., 1503 East New York Ave., Brooklyn 12, N. Y., LB **$451,237** (8 bidders), plumbing (New York, N. Y.);
Heating Maintenance Corp., 220 E. 138 St., New York 51, N. Y., LB **$478,575** (9 bidders), heating (New York, N. Y.);
John G. Hellman Co. Inc., 507 E. 76 St., New York 21, N. Y., LB **$687,500** (11 bidders), electrical work, (New York, N. Y.)

▲ **Edward Corning Co.**, 302 Bedford St., Stamford, Conn., CA **$1,693,000** (12 bidders) HIGH SCHOOL, Northern Blvd., St. James, SMITHTOWN, N. Y. Bd. Educ., Central School Dist. No. 1, 26 Oak Ave., Smithtown, N. Y. Bids Mar. 18. CD 2/27.

▲ **Delphi Constr. Co.**, 500 Zerega Ave., New York 16, N. Y. CA **$1,947,900**, Contr. 894, general constr. PSYCHIATRIC BLDG., Grasslands Hospital, VALHALLA, N. Y. Dpt. P. Wks., Westchester Co., County Office Bldg., White Plains, N. Y. Bids Feb. 19, CD 2/24 under LB.

▲ **Louis Kraus & Arthur Lefco**, c/o A. J. Zager, 18 Wallace St., Red Bank, N. J., Owner Builds. **$2,800,000**, 110 HOUSE DEVELOPMENT, Sycamore Ave. and Hance Rd., NEW SHREWSBURY, N. J.

▲ **Denny Constr. Corp.**, 344 Park Ave., Scotch Plains, N. J., Owner Builds. **$5,000,000**, 150 HOUSES on 177 acre Netherwood Golf Club, Cushing Rd. at Terrell and Cooper Ave., SCOTCH PLAINS, N. J.

▲ **Morris Heller (Holiday Homes)**, Aufen Ave., Somerville, N. J., Owner Builds. **$2,000,000**, 116 HOMES North Gaston Ave., SOMERVILLE, N. J.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Virginia**—BA On Or About 4/23—U. S. Eng., foot of Front St., Norfolk, Zone 1, dredging, 40 ft. channel widening, 4,175,450 cu. yd., Norfolk Harbor, ENG-44-110-58-20. CD 9/10.

BUILDINGS—BA

▲ **Ga., Atlanta**—CIVIL-CRIMINAL COURT—BA 4/16—Fulton Co. Comn., County Administration Bldg., constr. Civil-Criminal Court Bldg. $2,000,000. A. Thomas Bradbury & Assocs., 60 Fifth St. N. W., archts. CD 4/30.

▲† **Va., Fort Lee**—HOUSING, etc.—BA On Or About 4/23—U. S. Eng., foot of Front St., Norfolk, 304 unit Capehart Family Housing, on-site imprvs., and utilities. ENG-44-110-58-21. $5,000,000. CD 9/18.

▲† **Va., Norfolk**—FLEET HEADQUARTERS—BA 4/29—P. Wks. Office, 5th Naval Dist., U. S. Naval Base, 2 story, 202 x 205 ft. CINCLANT fleet headquarters annex, also 1 story utility bldg. at Naval Base, NBy 11031, Spec. 11031/57. $2,000,000. Clark, Buhr & Nexsen, Midtown Bldg., Norfolk, archts.-engrs. CD 9/19.

▲† **Va., Fort Belvoir**—HOUSING—BA 5/1—U. S. Eng., 1st and Douglas Sts. N.W., Wash. 25, D C., 618 family housing units (Capehart) ENG-49-080-58-8-(7). Plans deposit $50. E. Tucker Carlton, 206 E. Cary St., Richmond, archt. CD 3/18.

HEAVY CONSTRUCTION—LB & CA

▲† **Paul Smith Constr. Co.**, 431 E. Central Ave., Orlando, Fla., LB **$1,364,349**, est. $1,696,554, (3 bidders) constr. G/M laboratory engineering, SM-62 FAC; BASE communications bldg.; chapel educational wing and relocation of soft ball diamond, Patrick Air Force Base, ENG-08-123-58-30, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Mar. 20. CD 2/19.

▲† **Blount Bros. Constr. Co.**, 79 Commerce St., Montgomery, Ala. CA **$1,606,525** (11 bidders) air reserve facilities, incl. shop, storage, training and office, space, warehouse, a crash fire station, a sewage treat-

(Continued on page 101)

A Proved Way to Speed Output...
Bucyrus-Erie Dragline Buckets

Designed for Profitable Production A new-design Bucyrus-Erie dragline bucket helps deliver profitable production. The accurate balance of the bucket provides quick dig-in — so do properly pitched teeth, cutting edge and thin "slicing-action" lip. Tapered basket fills rapidly. Proper flare and balance reduce bobbing and spillage. High arch and smooth interior help bucket dump clean and fast.

For Long-Life Service

The use of BECOLOY cuts down the weight of buckets, yet makes them extra tough. BECOLOY has a fibrous structure which assures exceptional resistance to impact and shock. Field maintenance is simplified since the alloy can be cut with an acetylene torch and welded without special procedures.

A Size and Type for Every Job

New-design Bucyrus-Erie buckets are available in a wide range of sizes with solid or perforated baskets, in light, medium or heavy-duty types. Call your Bucyrus-Erie distributor for complete information on these buckets that outperform older designs.

27R57C

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

TORQMATIC delivers brute power at the blade

A SCRAPER has to take big deep bites, swallow up to 25 yards of earth and walk away. That takes power!

The converter section of the TORQMATIC DRIVE alone multiplies engine torque up to 350%.

TORQMATIC is a matched converter-transmission team with four speeds forward, two speeds reverse. A flick of the wrist, and your operator can shift to the right gear at full power without losing the "push." It puts an end to lugged or stalled engines because your engine is always working at its top-rated output.

TORQMATIC in a scraper means a big increase in tire life, and far better handling for the operator.

Take a tip from 80 manufacturers of 122 different kinds of road-building and construction equipment. Get the Allison TORQMATIC story.

Ask your equipment dealer, or write:
Allison Division of General Motors, Box 894E
Indianapolis, Indiana

GM TORQMATIC

Allison

TORQMATIC® DRIVES

The Tractors That Contractors Drafted

The NEW JOHN DEERE "440's"

The highly mobile new "440" Wheel Tractor is ideal for construction and maintenance work of all types.

Ruggedness, power, operator's comfort, and all-around economy are featured in the new "440" Crawler.

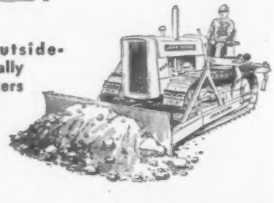
A new, complete line of John Deere quality-built working equipment matches the "440's" to the construction job.

THE new John Deere Crawler and Wheel Tractors are just what contractors ordered—big-capacity power at low cost—low in initial cost and in operating cost.

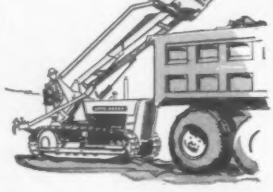
Both John Deere Tractors are ruggedly built from grille to drawbar . . . designed, inside and out, to fill definite needs in construction work of all types . . . to cut costs to rock-bottom on every job you assign them. Both tractors are built around the amazingly efficient John Deere engine, unmatched for delivering so much for so long for so little. Both are ruggedly constructed and boast many features, including optional clutch-type direction reverser, that enable them to do more than their share of the day's work. Power steering on wheel type is available if desired.

Let your John Deere industrial dealer fill you in on the many qualities of design and construction that make these tractors so suitable for the rough, tough everyday jobs of the modern builder and contractor.

Deep-digging, highly efficient backhoes . . . power-operated trenching units . . . and fast working scrapers are available for both crawler and wheel models.



Inside- and outside-mounted, hydraulically controlled bulldozers team up with the high-torque John Deere Crawler to handle a wide variety of work.



Heavy-duty front-end loaders with rear-end scarifiers make fast work of earth moving. Exclusive clutch-type direction reverser saves time, effort on many jobs.

Your John Deere industrial dealer can tell you of the many other types of equipment available for use with John Deere Industrial Tractors.

JOHN DEERE Industrial Tractors and Equipment

Completely Engineered for Industry

For Further Information Write: **JOHN DEERE INDUSTRIAL DIVISION • MOLINE, ILLINOIS**

(Continued from page 98)

ment plant, a water supply sys., a fire protection sys., utilities, storm drainage and roads and parking areas, Bates Field, MOBILE, ALA. U.S. Eng., 2301 Grant St., Mobile, Ala. Bids Feb. 26 CD 2/11.

▲† **T. L. James,** Ruston, La., LB **$1,430,295,** runway, airfield paving, blast protection pavement, utilizing 58,950 cu. yd. sub-base and base bit. binder, surf. courses, bit. surf. runway, etc., modification of drainage sys. and existing runway and approach lighting sys., Barksdale Air Force Base ENG-03-050-58-25, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Mar. 19. CD 2/17.

BUILDINGS—LB & CA

▲ **Catalytic Constr. Co.,** 1528 Walnut St., Phila., Pa., CA Eest. **$9,000,000,** design and constr. 5 story Point Pleasant PLANT to produce polyester film, APPLE GROVE, W. VA. Goodyear Tire & Rubbr Co., 1144 Market St., Akron, O. CD 2/20.

▲ **Daniel Constr. Co.,** Box 2286, Greenville, S. C., LB **$2,283,000,** GEOGRAPHY, GEOLOGY and MATHEMATICS BLDG., FOOD TECHNOLOGY BLDG., University of Georgia, ATHENS, GA. University System of Georgia, 244 Washington S.W., Atlanta, Ga. Bids Mar. 11. CD 1/17.

▲ **H. W. Ivey Constr. Co.,** 3133 Maple Dr. N.E., Atlanta, Ga., CA **$3,117,565,** BIOLOGICAL SCIENCES BLDG., for the Science Center, ATHENS, GA. University System Bldg. Auth., 244 Washington St. S.W., Atlanta, Ga. Bids Jan. 30. CD 2/10, under LB.

▲ **George A. Fuller Co.,** 1 Peachtree Bldg., Atlanta, Ga., LB **$1,447,000,** SERVICE BLDG., ATLANTA, GA. Rich's Inc., Broad and Alabama Sts., Atlanta, Ga. Bids Mar. 18. CD 3/5/57.

▲† **C. D. Spangler Constr. Co.,** Box 3007, Charlotte, N. C., LB **$4,064,940,** ARMED SERVICES HOUSING, Robins Air Force Base, MACON, GA. Base Procurement Office at Civilian Employees Club, Bldg. 1683, Dormitory Area, City of Warner Robbins, Ga. James C. Wise, 873 Spring St. N.W., Atlanta, Ga., archt. Bids Mar. 20. CD 2/27.

▲ **Babcock Co.,** 2960 Coral Way, Miami, Fla., Owner Builds, **$3,500,000,** 1 story CB-S, 400 RESIDENCES, SW 93rd Court and 45 Terrace, Miller Heights Subdivision, MIAMI, FLA. Houston & Ferguson, 4221 Ponce De Leon Blvd., Coral Gables, Fla., assoc. archts. James L. Deen, 808 Douglas Entrance Bldg., Coral Gables, Fla., archt.

▲ **Anthony Erpenbeck,** Kyles Ln., Covington, Ky., Owner Builds, **$1,680,000,** 120 one story, brick veneer and asph. vert. siding HOUSING UNITS on new streets off Swan Circle, ELSMERE, KY. Natl. Homes Corp., Lafayette, Ind., archts. Noel Walton, Burlington, Ky., engr.

▲† **Algernon Blair, Inc.,** P. O. Box 749, Montgomery, Ala., LB **$2,311,492** ORDNANCE SHOP AREA, incl. medium tank shop, general purpose vehicle shop, warehouse and central heating plant, ENG-15-029-58-25, FORT KNOX, KY. U. S. Eng., P. O. Box 59, Louisville, Ky. Bids Mar. 20. CD 2/17.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 23 Michigan

STREETS AND ROADS

April 15 Ohio — April 16, 23 Michigan

▲ **Ind., New Albany**—BA 4/29—City, City Hall, sewage disposal plant and sewers, incinerator. $2,225,000, Plans deposit $180, Consoer-Townsend & Assocs., 351 N. LaSalle St., Chicago, Ill., engrs. CD 10/16/56.

BUILDINGS—BA

▲ **O., Cincinnati**—SCHOOL—BA 4/22—Bd. Educ., 600 E. McMillan St., Mount Washington School. $1,500,000. Plans deposit $50. Felsberg & Gillespie, Ingalls Bldg., archts. Hanly & Young and Wm. Ehlers, 123 E. 6th St., engrs. CD 10/19/55.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Dpts. Bldg., Columbus, Bids opened Mar. 18,

O.—**Bruns Coal Co., Inc.,** P. O. Box 991, Zanesville, O. LB **$5,153,632,** est. $5,446,900 (9 bidders) Type T and structures, 8.853 mi., SR 1-(19.20-22.12) (village of Lakeville), ACL-1103 (17) Ashtabula Co.;

O —**Hatcher Bros., Inc.,** 2002 South Commercial St., Mingo Junction, O., LB **$253,911,** est. $334,100, (12 bidders) Type T-35 on B-119 and structure, 1.205 mi. SR 39-(27.35-27.38), S.-426 (5) Carroll Co.;

O.—**The W. L. Harper Co.,** 2910 E. Highland Ave., Cincinnati, O. LB Part 1 **$365,114.** est. $408,700; Part 2 **$991,391,** est. $1,110,100, Combined. **$1,356,505,** est. $1,518,800, 14 bidders) Type T-35, 3.569 mi. SR 125-3.94, 4.83 (Parts Nos. 1 and 2) F-416 (5) F-416 (4), Hamilton Co.;

O —**S. E. Johnson Co.,** Salisbury Rd., Maumee, O., LB **$459,938,** est. $509,200, (2 bidders) Type T-35, 2.587 mi., SR 2-3.02, F-498 (5) Lucas Co.;

O.—**H. H. Miller & Son,** R. F. D. No. 1, New Milford, O., LB **$2,334,305,** est. $2,312,500, (8 bidders) Type T-71, and structures, 6.929 mi., SR 5-(0.00) 15.78) F.-FG-1054 (1), Summit and Wayne Counties,

O —**Paul Kent, Inc.,** Box 598, Granville, O., LB **$215,000,** est. $261,400, (14 bidders) Type T-35 on B-119 and structure 0.417 mi. USR 62-26.181 Franklin Co.

▲ **OHIO**—State Hy. Dept., State Dpts. Bldg., Columbus, Bids opened 3/18,

Codell Constr. Co. and H. & F. H. Hosea Co., Winchester, Ky. LB **$3,399,466,** c. conc. paving 6.465 mi. State Route No. 1, in Harmony and Chester Townships, and constr. continuous steel girder bridge with concrete deck and concrete substructure Bridge No. MRW 1-0825; County Road No. 170 over SR No. 1; continuous steel girder bridge with concrete deck and concrete substructure Bridge No. MRW 1-0911 County Rd., Morrow Co. CD 2/26.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., State Office Bldg., Springfield,

Ill.—**Giertz-Melahn Co.,** 57 Douglas Ave., Elgin, Ill., LB **$152,982** (6 bidders) patching and resurf. Ill. 64, Dst. 1, DeKalb Co.; LB **$179,043** (5 bidders) resurf. 11.58 mi. Ill. 47 bet. Starks & Elburn, Kane Co. CD 3/7;

Ill.—**R. B. Potashnick Co.,** Cape Girardeau, Mo., LB **$2,259,804** (2 bidders) combination bid on 2 projects, Jefferson Co.; LB **$519,801,** concrete paving and wid'n. 2.16 mi. FA 185 N. of Mt. Vernon, Jefferson Co. CD 3/14;

Ill.—**S. J. Groves & Sons Co.,** 1104 W. Reynolds, Springfield, Ill., LB **$1,761,423,** concrete paving 7.38 mi. FA 16 from Mt. Vernon easterly, Jefferson Co. CD 3/14;

Ill.—**J. P. Wetherby Constr. Co.,** Ottawa, Ill., LB **$112,096** (5 bidders) bit. course 6.04 FA S 268 near Marseilles, LaSalle Co.;

Ill.—**McMahan Ill. Corp.,** Rochester, Ind., LB **$273,000** (5 bidders) resurf. 16 mi. on US 36 Tuscola east, Douglas and Edwards Counties;

Ill.—**J. P. Hollerich Co.,** LaSalle, Ill., LB **$153,979** (2 bidders) resurf. 11.48 mi. on US 34 from Princeton north, Bureau Co.;

Ill.—**Quad City Constr. Co.,** 644-25th Ave., Rock Island, Ill., LB **$1,171,134,** (10 bidders) concrete paving and bridge 7.17 mi. on US 52 bet. Savanna and Mt. Carroll, Carroll Co.;

Ill.—**R. W. Duntemann Co.,** Irving Park and Wolf, Bensenville, Ill., LB **$139,759,** (6 bidders), gravel course 4.64 mi. FAS 172 from Victor east, DeKalb Co.;

Ill.—**Danville Constr. Co.,** P. O. Box 223, Danville, Ill., LB **$235,091,** (5 bidders) resurf. 13.45 mi. US 36 from Ill. 49 to US 150, Douglas and Edwards Counties;

Ill.—**Princeville Stone Co.,** Princeville, Ill., LB **$72,672,** (4 bidders) seal coat surfacing 1.74 mi. Ill. 96 at Niota, Hancock Co.;

Ill.—**McCarthy Imprvt. Co.,** Kahl Bldg., Davenport, Iowa, LB **$336,782** (3 bidders) resurf., patching 23 mi. on Ill 96, 9 & 94 and U. S. 136, Hancock Co.;

Ill.—**J. D. Barter Constr. Co.,** Harrisburg, Ill., LB **$199,731,** (5 bidders) stone surf. 2.74 FAS 935 from Rosiclare NW, Hardin Co.;

Ill.—**W. B. Clements Co.;** Milford, Ill., LB **$153,970** (2 bidders) wid'n. and slab bridge 2.60 mi. FAS 325 near Woodland, Iroquois Co.

Ill.—**Gunther Constr. Co.;** 600 E. Main, Gelesburg, Ill., LB **$121,634** (2 bidders) surf. treat. 3.51 mi. FAS 400 from US 150 near Knoxville, west, Knox Co.;

Ill.—**D. E. Lynch Constr. Co.,** Watseka, Ill., LB **$112,628** (5 bidders) bit. surf. 4.17 mi. on FAS 437 near Sciota, north, McDonough Co.;

Ill.—**Suburban Oil Co.,** 734 W. 15th, Forest Park, Ill., **$91,048** (4 bidders) concrete resurf. 5.63 mi. US 14 from Church St. in Harvard SE, McHenry Co.;

Ill.—**Hoeffken Bros., Inc.,** 222 West B St., Belleville, Ill., LB **$2,442,659** (4 bidders) paving, grade separation on FA1-Rt 7, Madison Co.;

Ill.—**Johnson Roadbuilders, Inc.,** 1 South Easton, Joliet, Ill., LB **$107,072** (3 bidders) conc. resurf. 10.27 mi. FA 12 on US 40, Madison Co.;

Ill.—**Sankey Bros., Inc.,** Illinois Bldg., Springfield, Ill., LB **$81,585** (3 bidders) conc. surf. 2.28 mi. FA 49 east of Riverton, Sangamon Co.;

Ill.—**Bituminous Fuel & Oil,** First National Bank Bldg., East St. Louis, Ill., LB **$289,657** (3 bidders) conc. resurf. 19.35 mi. Ill. 159-bet. Belleville and Red Bud, Sangamon Co.;

Ill.—**McCalman Constr. Co.,** 619 Secton St., Danville, Ill., LB **$109,789** (2 bidders) resurf. 3.37 mi. Ill. Rte 1 north of Danville, Vermilion Co.;

Ill.—**Robt. A. Black, Inc.,** 13912 S. Halstead, Chicago, Ill., LB **$959,401** (2 bidders) conc. paving 0.85 mi. Delaware St. in Fairfield, Wayne Co., CD 3/7;

Ill.—**Dale Denny Constr. Co.,** Anna, Ill., LB **$244,226** (2 bidders) bit. surf. 3.33 mi. FA 13 from McClure easterly, Alexander Co.;

Ill.—**Litchfield Bit Corp.,** Hillsboro, Ill., LB **$180,427** (2 bidders) b. conc. resurf. 13.79 mi. Ill. 127 from US 40 SW of Greenville, Bond and Clinton Counties;

Ill.—**Champaign Asphalt Co.,** 310 E. Bradley, Champaign, Ill., LB **$228,503** (2 bidders) b. conc. resurf. 11 mi. US 150 east of Urbana, Champaign Co.;

Ill.—**Payne & Dolan, Inc.,** 38 S. Dearborn, Chicago, Ill., LB **$372,355** (3 bidders) b. conc. resurf. 11.76 mi. Taylorville south on FAS 645, Christina Co.;

Ill.—**E. T. Simonds Constr. Co.,** Carbondale, Ill., LB **$369,114** (1 bidder) conc. paving 1.62 mi. Ill. 34 east of Benton, Franklin Co.;

Ill.—**Bridges Paving Co.,** 1337 S. Kingshighway, St. Louis, Mo., LB **$321,837** (2 bidders) wid'n. 5.35 mi. SB1-142 Alma to Salem, Marion Co.;

Ill.—**Litchfield Bit. Corp.,** Hillsboro, Ill., LB **$152,768** (2 bidders) conc. resurf. 12 mi. Ill. 127 between Taylor Springs and Greenville, Montgomery and Bond Counties;

Ill.—**Starr Eng. Co.,** 1 S. Eastern Ave., Joliet, Ill., LB **$344,684** (7 bidders) shoulders on US 66 and surf. treatment Frontage Roads, Will Co., CD 3/14.

BUILDINGS—LB & CA

▲ **D. A. Visconsi & Assocs.,** 6867 Pearl Rd., Cleveland 30, O., Own Forces, **$1,500,000,** first section 100,000 sq. ft. addn. to Eastgate SHOPPING CENTER, MAYFIELD HEIGHTS, O. Rudolph J. Grosel, The Arcade, Cleveland 14, O., archts. CD 4/16/57.

▲ **Dahl Constr. Co.,** 679 N. Michigan Ave., Chicago, Ill., Own Forces. **$1,500,000,** 120 HOMES, 171st and Governors Hy., HAZEL CREST, ILL. Robert Saicheck, 679 N. Michigan Ave., Chicago, Ill., archt.

▲ **Bulley & Andres,** 1755 W. Armitage Ave., Chicago, Ill., CA **$1,500,000** (a) 3 story, 39,000 sq. ft. OFFICE BLDG., (b) 1 story, 26,000 sq. ft. PRODUCTION BLDG. on 7 acres SW cor. Harrison and Edens Expressway, SKOKIE, ILL. Standard Rate & Data Service, 1740 Ridge, Evanston, Ill. CD 7/31.

WEST OF MISSISSIPPI

STATE HIGHWAY LETTINGS

BRIDGES

April 11 Kansas, Minnesota — April 15, 16 Texas

STREETS AND ROADS

April 8 Colorado — April 10, 11 Kansas

April 11 Minnesota — April 15, 16 Texas

HEAVY CONSTRUCTION—LB & CA

▲† **Massman Constr. Co.,** 3917 Broadway, Kansas City, Mo., and **John F. Beasley Constr. Co.,** Merchant Bank Bldg., Dallas, Tex., combined venture, CA **$3,731,579,** steel, concrete Willis Bridge over Red River, near Willis, ENG-34-066-58-40, OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla. Bids Mar. 12. CD 3/20, under LB.

▲† **Farnsworth & Chambers,** 3601 Brock St., Houston, Tex. LB **$1,780,740,** est. $1,995,300 (10 bidders) Sched. 1 composite structure Amarillo Air Force Base, ENG.-34-066-38-20, AMARILLO, TEX. U. S. Eng., P. O. Box 61, Tulsa, Oakla. Bids about Mar. 19. CD 2/12;

Gilvin-Terrill Co., 413 E. 3 St., Amarillo, Tex. LB **$599,650,** est. $657,300 (10 bidders) Sched. 2 exterior facilities. (Amarillo, Tex.)

▲† **Del E. Webb,** S. 23rd Ave., and **Rubenstein Constr. Co.,** 1012 N. 27th Ave., both Phoenix, Ariz., CA **$17,650,396,** constr, 1,200 family housing units, Air Force Academy, IFB 05-613-58-30, COLORADO SPRINGS, COLO. Dpt. Air Force, Air Force Academy, Box 1670, Colorado Springs, Colo. Bids Mar. 18. Work to begin after May 23. CD 3/21, under LB.

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Bldg., Cerrillo Rd., Santa Fe,

N. M.—**Longenbaugh & Coe, Inc.,** 524 Montano Rd. N.W., Albuquerque, N. M., CA **$1,895,325,** est. $1,844,304, (3 bidders) Proj. No. I-093-2(7), east of Grants-West, Valencia Co.;

N. M.—**Henry Thygesen & Co.,** 424 Kinley Ave. N.E., Albuquerque, N. M., CA **$787,630,** est. $952,262, (3 bidders), Proj. No. F-017-2(2) and S-1157(1), 9 mi. West of Magdalena-West, Socorro Co.;

N. M.—**Skousen Constr. Co. & D. D. Skousen & Son,** Springer Blvd., Albuquerque, M. M., CA **$794,321,** est. $804,683, (3 bidders), Proj. No. F-033-2(1), Cuba-North, Sandoval Co.;

N. M.—**Harry Trotz Constr. Co.,** Box 1247, Lovington, N. M., CA **$169,756,** est. $189,801, (1 bidder), Proj. No. S-1231(4), Jct. SR-172 West toward Hagerman, Chaves Co.;

N M.—**Wylie Bros. Contr. Co.,** 6511 Domingo Rd. N.E., Albuquerque, N. M., CA **$364,963,** est. $464,907, (3 bidders), Proj. No. S-1336(3), Crownpoint-South, McKinley Co.;

N. M.—**Floyd Haake,** Aqua Fria, Santa Fe, N. M., CA **$95,307,** est. $120,521 (3 bidders), Proj. No. S-1437(1), Jct. U. S. 85-Colfax, Colfax Co. Grand total $4,107,302. CD 2/18.

BUILDINGS—LB & CA

▲ **Fane Vawter & Co.,** 207 9 St., Des Moines, Iowa. CA Total Est. **$1,138,000,** general contract SENIOR HIGH SCHOOL, FORT MADISON, IOWA. Bd. Educ., Fort Madison, Iowa. Bids Mar. 6. CD 6/13.

▲† **T. C. Bateson,** 6800 Denton Dr., Dallas, Tex., LB **$8,947,000** est. $11,500,000, (7 bidders) 510 units Capehart HOUSING at Richards Gebauer Air Force Base, No. 23-608-58-53, GRANDVIEW, MO. Procurement Officer, Bldg. 541, Base Theater Bldg., Richards-Gebaur Air Force Base, Grandview, Mo. Bids Mar. 26. CD 3/10.

▲† **T. C. Bateson,** 6800 Denton Dr., Dallas, Tex. LB **$3,062,706** (10 bidders), 3 story, brick, masonry HOSPITAL and 6,000 sq. ft. HEATING PLANT, ENG-23-028-58-25, FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Mar. 25. CD 2/26.

▲ **Linbeck Constr. Co.,** 2720 Saint St., Houston, Tex. CA Approx. **$5,000,000,** est. $1,000,000, 100,000 sq. ft. steel frame MERCANTILE, HOUSTON, TEX. Sakowitz Bros., 1111 Main St., Houston, Tex. Bid Mar. 25. CD 2/26.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 23, May 1 California

STREETS AND ROADS

April 15 Idaho — April 23 California

▲† **Calif., Sacramento**—RUNWAY, etc.—BA 4/22—U. S. Eng., 1209 8th St., runway primary strengthening

(Continued on page 104)

KOEHRING WORK CAPACITY *in action . . .*

Pre-cast concrete bents, weighing 9 to 14 tons, had to be erected on construction of a new school. Above photo shows how the contractor got the job done with a Koehring 305 truck crane. It has a top lifting capacity of 25 tons, and boom lengths from 30 to 100 feet, plus 15 to 30 feet of jib — handles maximum 130-foot boom and jib with low A-frame. Butt-connected crane boom is safe, solid. Inserts are easily changed — only 2 bolts per corner.

Sewer installation — 3 miles of 8-inch pipe, 5 miles of 6-inch pipe, and 6 miles of 4-inch pipe were layed in a hurry, with the help of this Koehring ½-yard hoe. Edging along the curb, pole-line, trees, it cut trench through black-top pavement and set pipe in place at a rate of 800 feet per day. The heavy-duty 205 hoe has a maximum digging depth of 17¾ feet — and widths up to 31 inches over side-cutters.

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.

45-ton roustabout — installing heavy machinery in the oil field, the new 445 truck crane (right) shows off its muscles. Heaviest load was a 23-ton mud pump — an easy lift for the big Koehring 445! It can pick up 45 tons with 40-foot boom at 15-foot radius. On high-lift work, it handles up to 120 feet of main boom, and 15 to 30-foot jib. Top travel speed on this mobile, heavy-lift crane is 31.8 mph.

A new 2-yard — Another size has been added to the Koehring *"work capacity"* team — a heavy-duty 2-yard, with 25-foot deep-section shovel boom, and 18½-foot twin dipper sticks. You'll like the 805's power, strength, and stability in heavy digging — and *extra capacity* as a clamshell, dragline, or crane (see lift rating chart below). Want to know more about it? Call Koehring distributor *right now.*

Look at the reach of the high-lift crane (below), starting construction on a new thruway. Boom lengths on this big Koehring 1205 range from 60 to 170 feet — and that's not all! When extra reach is needed, it handles up to *190 feet* of boom and jib. 90% power-assist on main-drum clutches gives operator light lever-pull and sensitive "feel" of load for precision lift work at every boom length.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs.	at 12-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs.	at 10-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs.	at 15-ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,200 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius

Want more information? KOEHRING HEAVY DUTY *See Koehring distributor.*

EXCAVATORS • CRANES • DUMPTORS® • PAVERS • FINISHERS • CONSTRUCTION MIXERS • MUD-JACKS®

K731R

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.

Other features that make OWEN the leading clam-shell "seller" are:

One-piece Head Construction

Riveted Bowl Construction

Single Main Shaft

Recessed Lip Design

On this our 50th Anniversary Year, The Owen Bucket Company wishes to express our appreciation for the excellent acceptance of our products and pledges to maintain in the years ahead the high quality of design, workmanship and service that has become associated with OWEN Products.

1908 1958 50th ANNIVERSARY The OWEN BUCKET COMPANY Cleveland, Ohio

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

(Continued from page 101)

and facilities at McClellan Air Force Base, Spec. No. 2340, ENG-04-167-58-33. $2,000,000. CD 11/16/56.

BUILDINGS—BA

▲ **Calif., Los Angeles**—SCHOOL—BA 4/18—Bd. Educ., 1425 S. San Pedro, constr. Grant High School in SE San Fernando Valley, $4,000,000. CD 4/8/55.

▲ **Calif., Blythe**—SCHOOL—BA 4/25—Palos Verde Unified School Dist., 7th Ave. and Hobson Way Blythe Senior High School, $1,800,000. Harold Gimeno, 1400 N. Sycamore St., Santa Ana, archt. CD 7/17.

BUILDINGS—SLC

▲ **Nev., Reno**—OFFICE—Bell Co. of Nevada, 151 W. St., soon lets contract, 55,400 sq. ft. telephone central office, 1st and Lake Sts. $1,500,000. Ferris & Erskine, 777 LaRue St., archts. CD 12/23.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,
Judson Pacific-Murphy Corp., 4300 Eastshore Hy., Emeryville, Calif., CA **$2,146,870** constr. superstructure, incl. vertical lift span bridge section which will connect with previously constr. bridge portion across Sacramento River on State Sign Rte. 12 at Rio Vista, 0.2 mi. approx. roadways and access ramps X-Sol-Sac-53 RVS C.C., Solano and Sacramento Counties. Bids Mar. 12. CD 3/14, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 3/26;
Piombo Constr. Co., M&K Corp., and Connolly Pacific Co., P. O. Box 835, San Carlos, Calif. LB **$5,169,810,** est. $6,250,000 (8 bidders) joint venture, grading, paving 2.5 mi. 6 lane freeway on Eastshore Freeway, U. S. Hy. 40 between 0.3 mi. south of El Cerrito Overhead in Albany and 0.2 mi. south of Jefferson St. in Richmond, incl. 2,122 ft. bridge at El Cerrito Overhead. IV-Ala-CC, 69.7, alb, Rch. Alameda and Contra Costa Counties. CD 2/20.

▲† **Baldwin Contg. Co., Campbell Constr. Co. & Erickson Constr. Co.,** P. O. Box 311, Marysville, Calif. CA **$2,245,000** joint venture, addnl. ammunition storage at U.S. Naval Ammunition Depot, NBy 9449, CONCORD, CALIF. Dpt. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids Mar. 19, awarded Mar. 24. CD 3/25, under LB.

▲ **Pacific Bridge Co.,** 256 Montgomery St., San Francisco, Calif. LB **$1,176,625,** est. $1,000,000 (5 bidders) base bid, subsidence remedial measures, 2nd increment, Long Beach Naval Shipyard Spec. 9997-57, LONG BEACH, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Mar. 21. CD 2/24.

▲† **At Base Theatre, Edwards Air Force Base,** Muroc, Calif., cancelled bids to have opened Apr. 22 armed services housing proj. consisting of 778 family housing units to be constr. at Edwards Air Force Base, Inv. 04-611-58-200, MUROC, CALIF. CD 3/19.

BUILDINGS—LB & CA

▲ **Olson Constr.,** 1549 S. 2nd W., Salt Lake City, Utah. CA **$2,954,267** HOSPITAL WING, SALT LAKE CITY, UTAH. Holy Cross Order of Catholic Sisterhood, Sister Olivia Marie, admin., 1045 E. 1st St., Salt Lake City, Utah. Bids Mar. 11. CD 3/19, under LB.

▲ **Rude Constr. Co.,** 2201 Van Ness Ave., San Francisco, Calif. CA **$1,500,000,** 125 unit HOTEL and APARTMENT UNITS (incl. 2 story garage, swimming pool coffee shop, cocktail lounge, dining room office) at Van Ness and Filbert, SAN FRANCISCO, CALIF. Charles Schonfeld, c/o contractor. Alta Eng. Assocs., c/o contractor, archts. CD 11/28/56.

▲ **Bd. Suprvs., Santa Clara Co.,** Civic Center, 1st and Rosa Sts., San Jose, Calif. rejected bids Mar. 12, 194 HOSPITAL Addn., alterations SAN JOSE, CALIF. LB $1,544,000. CD 3/19, under LB. Will re-advertise.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 23 Ontario

BUILDINGS—LB & CA

▲ **Foundation Co. of Canada Ltd.,** 57 Bloor St. W., Toronto, Ont., CA approx. **$4,000,000** (13 bidders), U-shaped DENTAL COLLEGE, 185,000 sq. ft. with wings of 2, 3 and 5 story, part structural steel, part rein.-conc., TORONTO, ONT. University of Toronto, F. J. Hastie, supt. University of Toronto, Room 11, Simco Hall, Toronto, Ont. Bids Mar. 5, awarded Mar. 19. CD 1/31.

▲ **Bernard Malo,** 615 rue Papineau, Joliette, Que., CA **$3,000,000,** reconstr. SEMINARY CHAPEL and ACADEMIC HALL, JOLIETTE, QUE. La Siminaire de Joliette, Rue St. Charles Borromee, Joliette, Que. Gerard Notebaert, 3460 Jeanne d'Arc. Ave., Montreal, Que., archt. (chapel). Audet & Blais, 436 rue Lindsay, Drummondville, Que., archt. (centenary wing.) Awarded Mar. 20. CD 11/19.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲† **Argentina**—BA 4/27—Provincial Hy. Dpt., Rivadavis 1450, Corrientes, 22 mi. hy. between Bella Vista and Santa Lucia. $3,600,000.

(Proposal Advertisement see pp. 118 to 121)

4-machine utility in the large economy size

3-YD TD-18 4-in-1!

For your big contracts that are "jumping with jobs"

IT'S A . . . Skid-Shovel

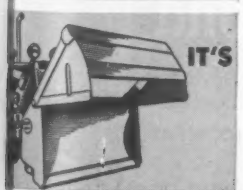
. . . with exclusive pry-over-shoe break-out and ground-level roll-back.

IT'S A . . . Clamshell

. . . that fills itself in one fast gulp—gives you hopper-high, self-clean-out dumping.

IT'S A . . . "Carry-type scraper"

. . . that grades, strips, or spreads with inch-close accuracy. "Boils" itself full!



IT'S A . . . Bulldozer

. . . with clam lip up and shoes on the ground, it's a big-yardage, earth-rolling blade!

Contractors are replacing the performance of a power shovel, bulldozer, clamshell, scraper, and "single-action" tractor loader—with one International Drott 4-In-1. The 4-In-1 strips and grades with accuracy, too!

The big 3-cu yd rig (shown) is the mass producer of the 4-In-1 line. It's sized to do an endless variety of big jobs on big contracts. It gives you king-sized 4-machine utility, for one moderate price!

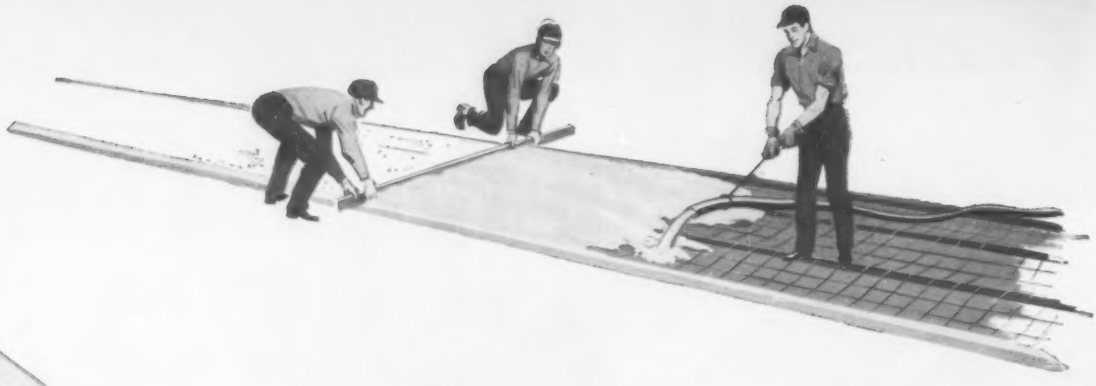
From the bonus-powered TD-18's foam-cushioned seat, you just move the "machine selector" lever to position any of the four big-capacity 4-In-1 actions for instant use!

Add up the thousands of dollars a TD-18 4-In-1 can save you, in price and wages. Measure the huge, tough-job advantages of exclusive pry-over-shoe break-out action. See what it means to command the built-in performance protection of exclusive, shock-swallowing Hydro-Spring. See your International Drott distributor for a demonstration!

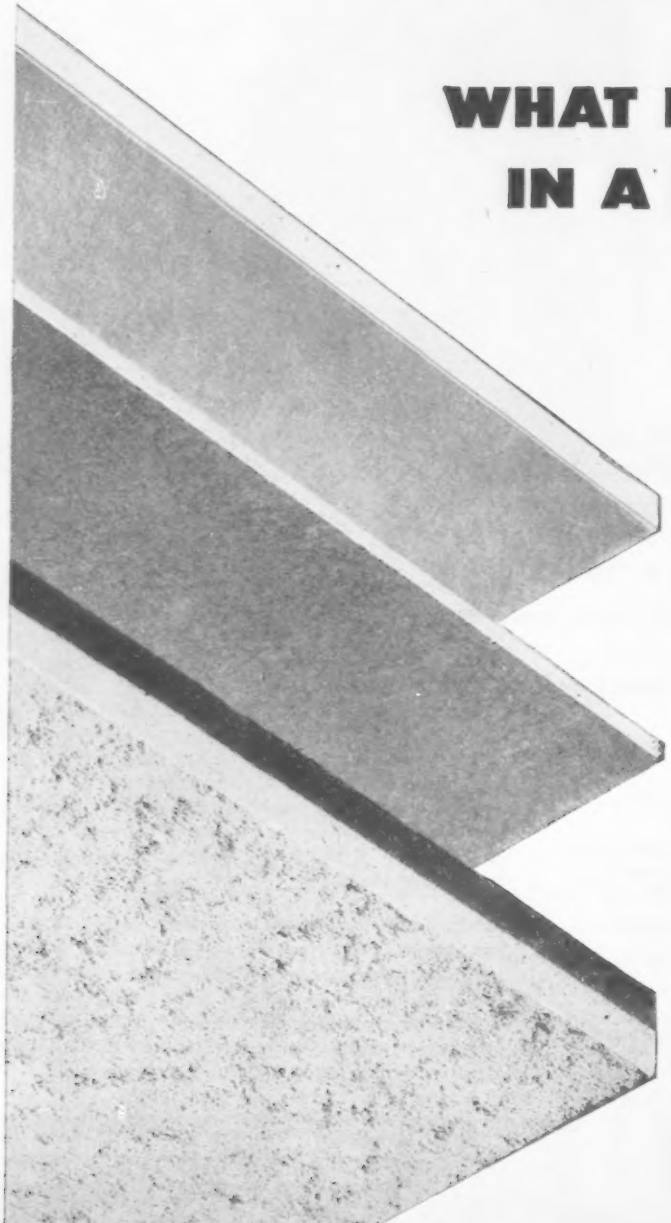
International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®



WHAT DO YOU WANT IN A FORMBOARD?



ECONOMY?

Then specify Gold Bond *Gypsum* Formboard... for lowest material cost. It's made with a ½" core of fire-proof gypsum sandwiched between two layers of special, mildew-resistant paper. Available in 32" and 42" widths, gypsum formboard comes in ready-cut lengths to fit main purlin spacing... reduces installation time.

RESISTANCE TO HUMIDITY?

The right board for roof overhangs, canopies, and high-humidity areas is Gold Bond *Asbestos-Cement* Formboard. These panels are made in ¼" and ⅜" thicknesses... custom-cut to the size you specify. Use them in high temperature areas, too. They're easily painted, if desired.

ACOUSTICAL TREATMENT AND INSULATION?

Make Gold Bond *Econacoustic* your choice. It offers an attractive ceiling finish with an N.R.C. of .60 whether mill-painted or plain. Cross-laminated, for minimum deflection, this wood fiber structural board has a thermal conductivity of .36 for the 1" thickness, and .24 for the 1½" thickness. Regular *Insulation* Formboards are also available.

THEN... complete the job with a Gold Bond® Poured Gypsum Roof Deck. For detailed information, write Dept. EN-48, National Gypsum Company, Buffalo 2, New York.

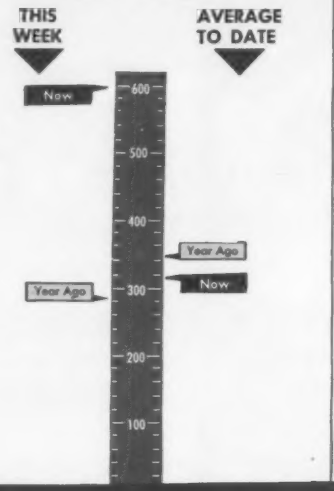
Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY

Construction Scoreboard

ACTIVITY THIS WEEK

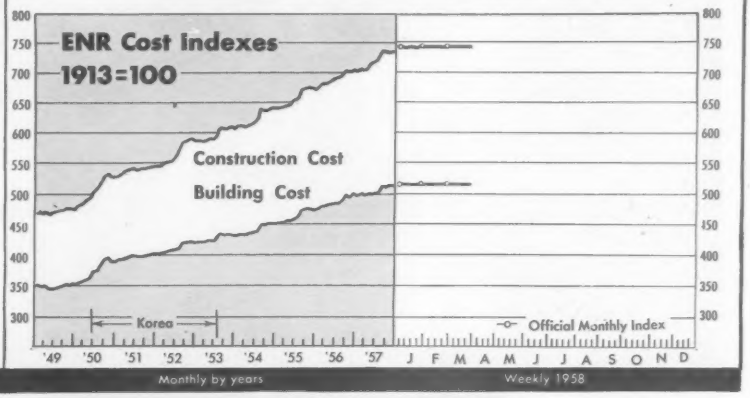
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Mar. 27 1958	% Change from: Feb. 27 1958	Mar. 28 1957
Construction Cost	744.16	−0.03	+4.9
Building Cost	515.84	−0.05	+2.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 14 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$598.5	$4,445.1	−9
Private	385.2	2,137.1	−6
Public	213.3	2,292.7	−11
State & Municipal	158.3	1,813.4	−1
Federal	54.0	479.3	−35
By Type of Work			
Public			
Waterworks	6.2	63.7	−32
Sewerage	6.3	151.3	+34
Bridges*	18.4	120.0	−35
Highways	69.5	688.7	−9
Earthwork, Waterways	3.1	169.5	−47
Buildings, Excl. Housing	52.6	623.0	+8
Housing	24.0	300.3	+67
Unclassified	33.3	176.2	−50
Private			
Mass Housing	326.1	954.5	+25
Commercial	23.4	494.5	+8
Industrial	31.4	567.3	−36
Unclassified	4.2	120.8	−26

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

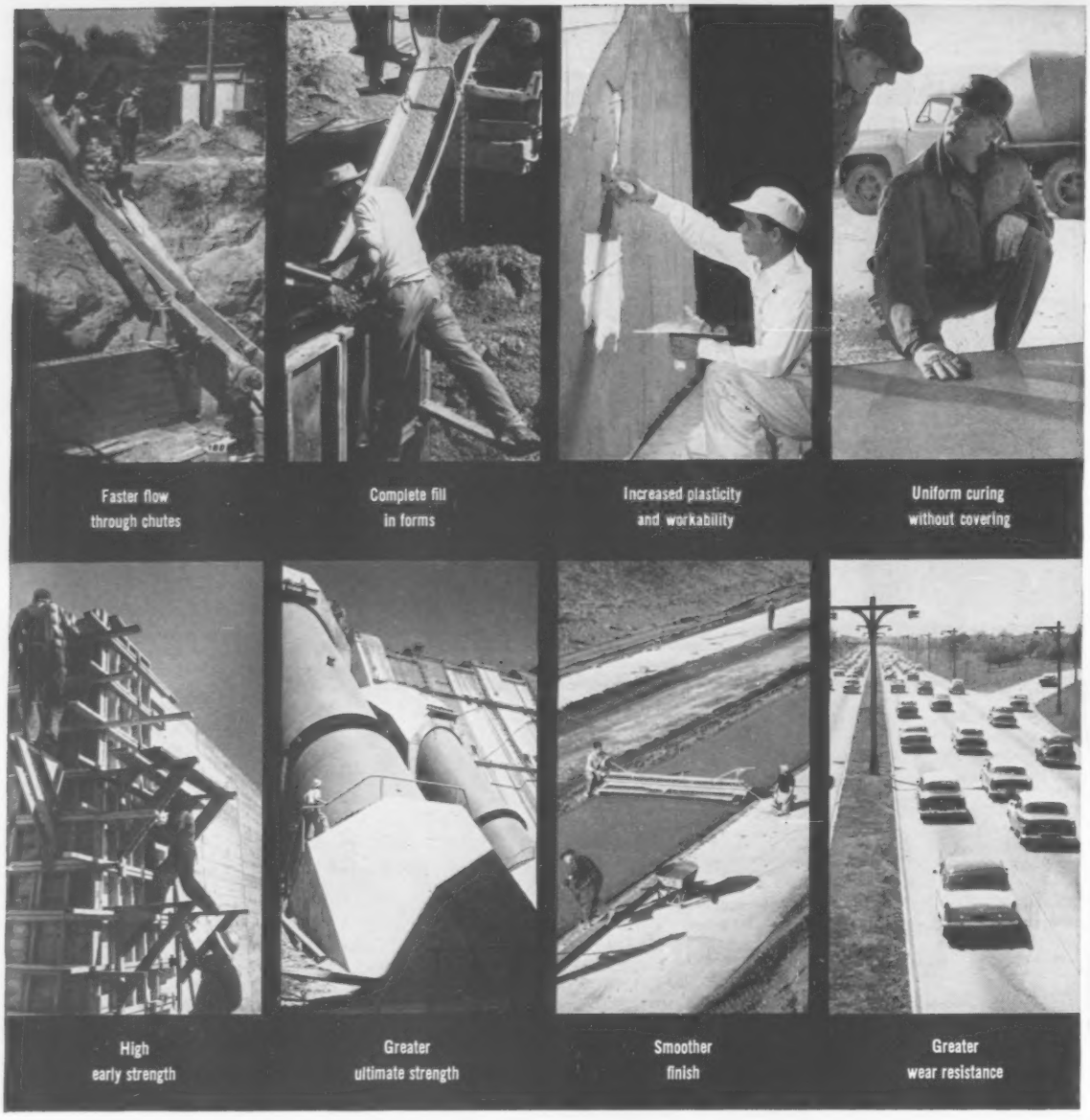
	Week of Mar. 27	Cum. 13 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$105.1	$1,477.8	−9
State and Municipal:			
All Except Housing	116.1	1,854.2	+33
Housing	19.1	20.3	−51
Federal Loans	8.9	56.1	+52
Federal Aid	...	....	...
Total Nonfederal	$249.3	$3,408.4	+10
Federal Appropriations:			
Projects in U. S.	...	$520.0	...
Outside U. S.	...	....	...
Total New Capital	$249.3	$3,928.4	+27

STATE AND MUNICIPAL BOND SALES

	1958 Mar. (millions)	1958 3-Mos. (millions)	Percent Change from 1957 Mar.	3-Mos.
All Construction	$610.6	$1,874.5	+ 21.1	+30.2
Buildings	305.3	724.2	+ 6.7	− 8.3
Schools	229.2	471.0	+ 9.9	−20.8
Housing	19.4	20.4	+ 10.5	−51.0
Other buildings	56.7	232.8	− 5.4	+52.1
Heavy Construction	305.3	1,150.3	+ 39.9	+77.1
Waterworks	34.9	133.0	− 33.6	+ 8.9
Sewerage	46.1	112.9	+ 34.0	+ 9.1
Bridges	2.9	4.2	+790.9	+746.0
Highways	114.5	300.1	+165.2	+132.4
Earthwork, waterways, drainage	0.8	102.3	− 69.8	+1,529.4
Unclassified	106.1	497.8	+ 26.2	+72.8
Electric and gas utilities	43.9	300.7	+191.9	+442.6
Airports	4.4	35.9	+ 51.4	−45.6
Parking facilities	4.2	4.2	+ 9.8	−50.2
Other	53.6	157.0	− 13.9	− 0.8

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturer Prices, 1947–49=100—BLS	Feb. 1958	Percent Change from last Month	Year
All Types	165.5	+0.1	+ 5.9
Cranes, Draglines and Shovels	163.0	0	+ 3.7
Shovel, ¾ cu yd	167.4	0	+ 5.3
Shovel, 1–1½ cu yd	174.3	0	+ 5.1
Shovel, 2–2½ cu yd	154.4	0	+10.9
Crane, truck mounted	164.2	0	+ 2.6
Scrapers and Graders	158.8	0	+ 6.6
Scraper, 4 wheel, 12-15 cu yd	151.3	0	+ 7.6
Grader, heavy duty	164.0	0	+ 6.4
Tractors (non-farm, incl. industrial)	181.0	+0.1	+ 7.3
Wheel-type, off-highway (January 1955=100)	128.4	+0.6	+ 8.3
Crawler type, 80-120 dhp	186.7	0	+ 8.4
Machinery, Tractor Mounted	161.7	0	+ 4.8
Dozer, hydraulic controlled	177.3	0	+ 4.4
Loader, shovel type	153.9	0	+ 5.1
Specialized Machinery	150.2	0	+ 5.4
Ditcher	154.1	0	+ 1.5
Roller, tandem	193.2	0	+11.8
Roller, 3 wheels	161.6	0	+ 8.7
Portable Air Compressor	159.1	0	+ 8.8
Contractor Air Tools	164.3	0	+ 9.5
Mixers, Pavers and Spreaders	149.3	+0.3	+ 5.4
Mixer, truck, 6 cu yd	128.1	+1.9	+ 6.6
Mixer, paving, 34 cu ft	185.2	0	+11.0
Bituminous paver	153.0	0	+ 2.1



Better concrete from flow to finish with Dow Calcium Chloride

Anything made with concrete benefits with Dow Calcium Chloride included in the mix, especially in cold weather construction.

It speeds production, assures a stronger, higher quality concrete that requires little pointing up. And it adds very little extra cost to the price of the concrete!

In addition, Dow Calcium Chloride comes in two forms—Dowflake®, the flake type—and Peladow®, high-test pellets with 94-97% concentration. One is just right for your particular operation and concrete application.

Descriptive information on how to make concrete better from flow to finish can be yours by writing us direct. Do it today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. CC-705V.

YOU CAN DEPEND ON DOW

Local Public Works to Stay on Schedule

Municipal county public works projects will be strong stabilizing sources of contractor business

Communities across the nation both large and small, are pushing ahead with their public works construction programs as they had been scheduled in the earlier years of planning. An ENR survey of 60 key areas indicates that the economic readjustment being experienced has not panicked local-government heads into hasty calls for increased spending or slashes in expenditures already programmed.

The "business as usual" attitude is both psychologically and economically reassuring.

Of the 60 municipal or county-type governments checked, 50 reported that they intend to remain on schedule with programmed projects—neither speeding or slowing them. Seven said a speed-up was under consideration, but only two indicated a cutback was possible.

• **Smooth operation**—The reports therefore support the ENR annual forecast that state and municipal spending for construction this year would be 10% above 1957 with a total of $8.2 billion (ENR Feb. 13, p. 49).

At this time, the threat of a possible downturn in local government income is not apparent. A sharp drop in tax collections could possibly inspire a retrenchment, but this type of misfortune does not seem to be looming on municipal horizons. Almost without exception, the tax receipts were running the same as, or higher than last year. Less than 10 reported a decline, and most of these dips were registered in sales or gross business receipts. Others occurred for such reasons as a change in tax-due date or other such special reason not likely to occur again in the near future.

The sure prop to maintenance of construction schedules is the large amount of bond issues that already have been approved by the voters. And with the interest rate structure now at much lower levels than those of last year, the fiscal authorities will be strongly encouraged to move the issues into the market for sale. Forty areas reported that prospects for letting contracts this year are from "good" to "excellent." Only one area was in the "fair" category, and three in the "poor" outlook sector.

But the trend definitely is toward keeping schedules on a basis as originally planned, and this is most evident in the larger, more important regions of the national economy.

In three areas, construction programs are definitely being stepped up: Chicago; Harrisburg, Pa., and the Knoxville-Oak Ridge, Tenn., area. The last two are accelerating their programs to counteract rising unemployment.

Bright prospects for municipal contracting were reported in these areas: New Haven; Trenton; Norfolk; Birmingham, Ala.; Miami; Omaha; Billings, Mont.; San Francisco, and Portland, Ore.

Cities describing "good" prospects were Buffalo, N. Y.; Atlanta; Nashville; Miami Beach; Milwaukee; Jefferson City, Mo.; Topeka; Austin, Tex.; Ft. Worth; Boise, and Sacramento.

In only two cities were contracting schedules being stretched out—Wilmington and Louisville. Even these two cities rate prospects "good" despite the slowdown.

The one dark spot in the ENR survey was Oklahoma City. The outlook was rated "poor" and construction of public works other than highways and bridges will be 40% below the 1957 rate.

• **On the state level**—Many states are increasing spending this year either by moving plans off the shelf or speeding projects that were not planned for contract this year.

In Pennsylvania, Gov. George M. Leader has ordered fast action on $100 million in public school construction as a means of easing the unemployment condition in that state. He directed the State Department of Public Instruction to start immediate processing of the first quarter of a $400 million backlog of applications for state subsidies to school districts.

At the same time, the school districts received notification that the state is prepared to provide provisional reimbursement approval if the districts accelerate their planned projects.

Approximately 100 buildings will be involved in the program which is expected to chop at least five months from current construction schedules.

The formal approval for the telescoped program will be given July 1 when the ceiling for reimbursed construction will be hiked an additional $100 million.

In order to obtain reimbursement approval, school districts have been instructed to retain architects, acquire sites and prepare preliminary plans. Districts that do not take these positive actions possibly will be sidetracked in favor of those that move ahead as recommended.

• **Other public works pushed forward**—The accelerated program is not limited to school construction, however. Governor Leader also said other public works programs would be speeded by 40% to meet a 46 week construction program. This could add another $100 million to the $100 million in school construction.

To be affected are highways and bridges, hospitals, state teachers' colleges, state police substations and park expansion.

• **Ohio makes plans**—Ohio's Public Works Department also is pushing ahead with its projects and reported that 128 jobs having a total estimated cost of $55 million will be ready for contract this year. The total is a boost of $51.5 million in contracts let last year.

The program will be financed by part of the six year, $150 million in bonds authorized at referendums in November and also by funds from capital improvement appropriations authorized by past sessions of the legislature.

And in Arizona, Gov. Ernest McFarland appealed to the legislature for a one-cent-a-gallon boost in the gasoline tax. He said the increase would permit the state to put $8.8 million in highways under contract by April. The total of all projects which could be contracted for by July 1 is placed at $25 million, provided funds are available.

• **Acceleration in North Carolina**—Gov. Luther H. Hodges of North Carolina also swung into line with many other states and called for a boost in state building and highway construction as a means to bolster the state's economy.

The governor said the move was partially a psychological one and emphasized that the program would not involve "new money" as only planned programs would be affected.

(*Continued on page 110*)

He said that about $144 million would be available in the state for public construction, including highways. Local school construction projects would add another $28.5 million to the total.

Highway work planned amounts to $80 million and contract letting would be speeded where possible.

The state Medical Care Commission told the governor that $8.5 million in work is now under way and that by the end of the year, an additional $19.3 million of hospital construction possibly could be launched.

• **Hard-hit Michigan**—In Michigan, where unemployment has soared because of the sharp downturn in the automotive and allied industries, Gov. G. Mennen Williams brought a new proposal before the state legislature. He suggested the creation of a state building authority with the power to issue $113.9 million in bonds to finance 82 building projects. He said that such a program would provide from 28,000 to 34,000 jobs.

Record Budget —But

Maryland legislature cuts capital outlays

Maryland's General Assembly closed its 1958 session after prolonged haggling over financing of the state's biggest budget to date. Legislatively, it practically ignored the hottest issue in local and federal politics today: the recession.

The legislators started the final lap of their session nine days before the adjournment by approving a budget of $378.6 million for the 12 months beginning July 1. Then the hassle over financing began, extending the session more than five days beyond the constitutional limit of 30 working days. A special session had to be called by Gov. Theodore R. McKeldin so that the appropriations could be legitimately voted.

The main financing features approved were increases in the sales tax and the tax on personal income, which together will yield about $33 million and balance the budget now that it has been chopped $7.7 million below the governor's requests.

• **Capital outlays cut**—The biggest cut came in proposed capital expenditures, which were cut back to $9.5 million from the $15.2 million requested. What remains is mostly earmarked for the expansion of existing facilities. The major construction projects are:

• A new hospital for the criminally insane, to cost $790,000.

• Addition of a unit for emotionally disturbed children at one of the state training schools. Estimated cost is $485,000.

• A central laundry for the state penitentiary, to cost $769,000.

• A new classroom building, to cost about $400,000, at one of the boys' training schools.

• **State Roads Commission**—The Assembly passed no measures that would greatly weaken the present powers of the Roads Commission. A bill requesting virtual veto power for county government on highway locations picked by the State Roads Commission was enacted in a drastically modified version. In its final form the commission was told merely to rearrange priorities on road projects after conferring with local officials.

A bill that would have enlarged the Roads Commission to five members from its present three members died in committee.

On the other hand, a bill the commission wanted also was killed. This would have given road officials authority to borrow additional funds, to accelerate construction of interstate highways.

The 1958 session may be remembered as the one that gave Maryland its first roadside control law. Under the new law, billboard advertising will be prohibited within 600 ft of an expressway. Expressways are defined clearly to refer to highways in the interstate system but not much else.

Another bill rejected by a wide margin would have abolished the state's Water Pollution Control Commission and given its duties to the Health Department.

Two Construction Firms In Detroit Area Merge

Richert, Dreyer and Endress, Inc., Ferndale, Mich. construction firm, has merged with Perron Construction Co. of Detroit. The latter company is the survivor in the consolidation.

Frank J. Perron is president of the company, with Charles H. Richert as vice president and administrative assistant. Other officers are Walter F. Dreyer, vice president and general superintendent and Arthur L. Endress, vice president and chief engineer. Clark E. Andrew will continue as secretary and treasurer.

The Perron company, established eight years ago now is in tenth place in size in the Detroit area. Mr. Perron said that the merger will make it possible for the company to place among the top six industrial contracting firms in southeastern Michigan.

End of Astor Plaza

Bank building to go up on Manhattan site

The 46 story office project in midtown New York City known as Astor Plaza was put on the shelf permanently last week by its backers when the First National City Bank of New York announced an agreement to purchase the lease held on the land by Astor Plaza, Inc. The corporation to develop the site was formed by Col. Vincent Astor and two associates. Excavation of the site has been stalled since the Astor group discovered last October that it could not obtain financing for the project.

Though First National City disclosed only that a building would be erected to house some of its "technical operations," it was learned that a complete redesign of the project would be involved. It was reported that the bank was to consider a structure of about 1.25 million sq ft, or 250,000 sq ft more than was planned for Astor plaza. However, the building will probably be lower than 46 stories, presumably discarding the broad, landscaped plaza feature of Colonel Astor's project. The original construction contract was held by George A. Fuller Co. of New York.

None of the parties would disclose the price of the lease. The land is owned by William Waldorf Astor's estate, of the English branch of the Astor family. The deal was believed to include an option to purchase the land eventually. Because of the trust ownership of the land, the agreement must be approved by the New York State Supreme Court.

Astor Plaza was intended to be a "prestige building in a prestige location." Colonel Astor once said the project's cost was unofficially put between $40 million and $50 million, although ENR's records show a $75 million contract award. In some circles the project was considered too lavish for speculative type of operation. The firm approached the mortgage market with rental commitments on only one-third of the building and found it could not obtain a mortgage commitment on acceptable terms. An unsuccessful search for additional partners followed for several weeks before negotiations with First National City began over three months ago.

Astor Plaza was to have been Colonel Astor's first construction venture in New York City, where he is reputed to own as much as $40 million in real estate.

(*B&F continued on page 113*)

New

STEELCRAFT

Steel Slope-Beam Roof System

suggests many new directions for low-profile building design

Unlimited "idea potential"—The Slope-Beam Roof System lends itself to innumerable interesting arrangements, allowing complete freedom of treatment with concrete block, masonry, metal curtain wall and a wide variety of other materials. And, it can be used with all kinds of roof deck.

A "natural" for lean budgets—You save material costs and eliminate unnecessary weight because Slope-Beams require less steel than rolled sections for equivalent loads. Also, lighter Slope-Beams permit economies in columns and foundations, and the entire System can be erected at less cost.

Made to order . . . fast!—Completely integrated Slope-Beam Roof Systems are custom manufactured, even to the fraction of an inch. But, thanks to special production facilities, you can expect much faster delivery than you normally receive on rolled sections . . . often within 30 days.

Mail this coupon for the new Slope-Beam Catalog, complete with detail drawings, specifications and load tables.

The **STEELCRAFT** Manufacturing Company, Dept. 2S-4E
9017 Blue Ash Road, Cincinnati 42, Ohio

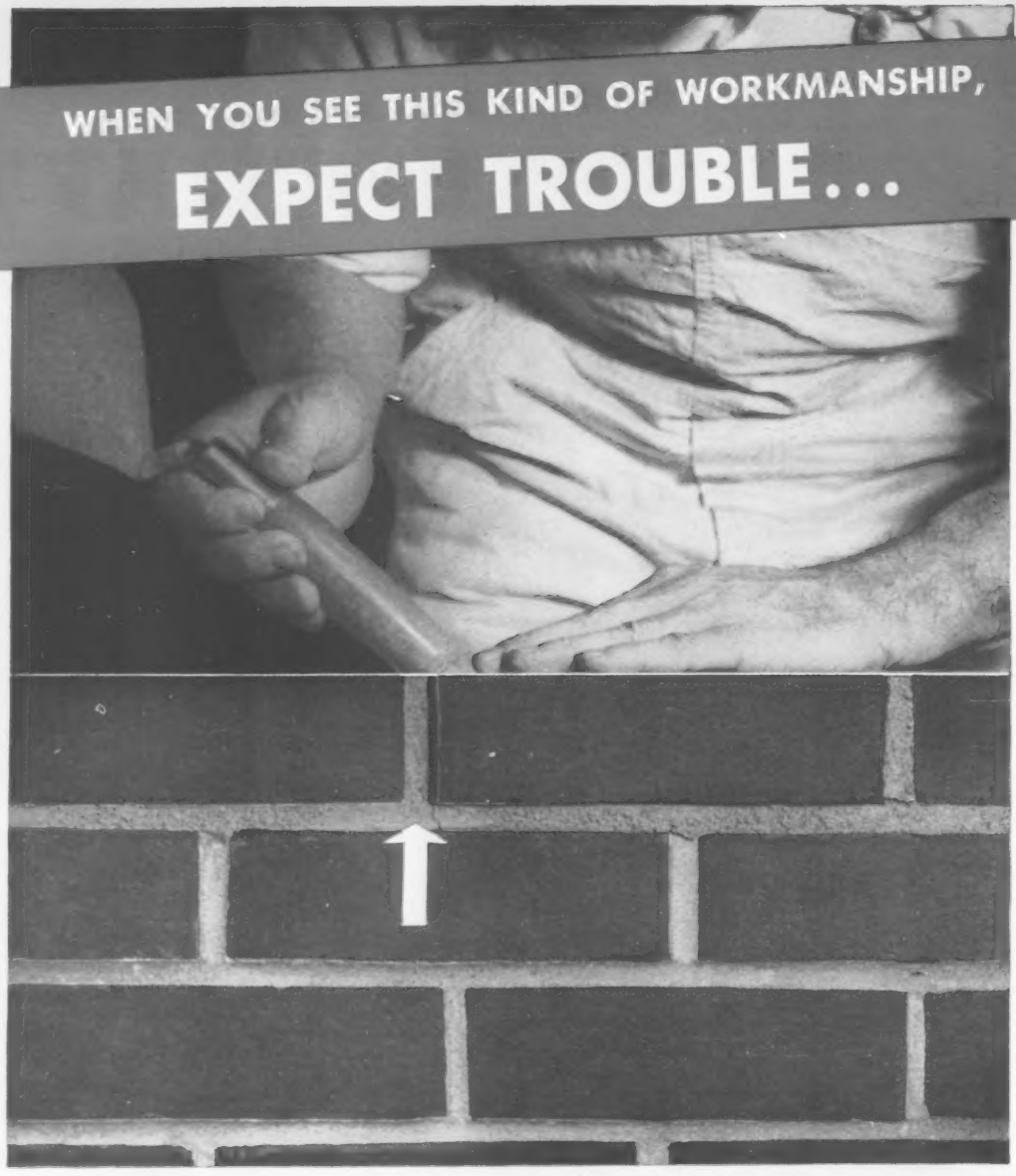
Please rush my copy of Steelcraft's new Slope Beam Catalog, complete with detail drawings, specifications and load tables.

Name _____

Company _____

Address _____

City _____ State _____



GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes wetting the brick, securing full head and bed joints, backplastering the face brick—*and laying the brick carefully to keep the bond. The position of the brick should never be shifted after the mortar has stiffened.*

Expect trouble when brick are shifted or tapped into place after the mortar has stiffened. Cracks will result and the wall may leak.

Brixment mortar has high water-retaining capacity. It resists the sucking action of the brick. It stays plastic and workable longer. Brixment mortar therefore makes it easy for the bricklayer to lay the brick accurately, before the mortar has stiffened.

Brixment mortar has great plasticity, high water-retaining capacity and bonding quality, great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

BRIXMENT

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

Spending Potential

State referendum looms on $200 million in bonds

New York State's legislature adjourned last week in a final rush that saw it approve a measure that would place a $200 million borrowing proposition before the voters in November for the construction of low and middle-income housing and slum clearance. And while the lawmakers were acting, Gov. Averell Harriman was simultaneously placing his signature on bills to spur private investment in home mortgages and another that would clear the way for the procurement of federal funds to defray part of the construction costs of $157 million for approaches to George Washington Bridge.

Among other bills signed by the governor were two giving banks and trust funds wider powers to invest in real estate mortgages. One would empower savings and loans associations to purchase fractional interests in mortgages. They are now restricted to whole mortgages. The other bill will permit trust companies, as trustees for estates or other trusts, to invest in mortgages insured by the Federal Housing Administration.

• **Spur to housing**—The legislature also gave final approval to bills aimed at stimulating homebuilding by expanding mortgage-lending powers of savings banks. Similar bills had been passed but vetoed, so the revised bills were changed to overcome some of the objections noted in the governor's veto message.

As now presented, one of the changes would limit the new lending powers to single-family structures instead of houses up to four units. Another change limits loans to an area within 50 miles of a lending bank instead of anywhere in the state.

A main provision in the bills would permit mortgage loans up to 90% of appraised value of a property with a maximum loan of $25,000. Such mortgages also would allow a mortgage term of 30 years or 75% of the estimated life of the property, whichever is less.

• **Bridge legislation**—The bridge law empowers the State Superintendent of Public Works to contract with the Port of New York Authority for the construction of any phase of that work which may be eligible for federal aid. All other costs will be financed by the authority.

In addition, the authority is permitted to prepare all necessary designs, for plans and specifications for the bridge approaches, subject to review by the State Superintendent of Public Works and to let all necessary contracts for the work under its own name.

The legislature also boosted school aid funds to school districts by $53.5 million, placing emphasis on areas of rapid growth. School construction in New York City was also given a partial lift by passage of a proposed constitutional amendment that would allow the city to exempt $500 million in bond financing from the city's debt limit.

Philadelphia to Buy First Units for Public Housing

Philadelphia's Public Housing Authority will move ahead with its experimental plan of buying existing housing units which will then be leased by the agency to families eligible for public housing. The authority will buy 25 units out of 200 authorized by the U. S. Public Housing Administration (ENR Feb. 13, p. 96). The city agency has set a maximum figure of $10,000 as the cost of both purchase and rehabilitation. The latter is expected to cost between $2,000 and $2,500.

Most of the properties being considered are delinquent in taxes and are located in partially blighted areas. In addition to serving public housing needs, the program also will fit into the city's urban renewal program.

If the pilot program is successful, it could be the basis for a national pattern.

Water-Tax Bill in Ohio Cuts Into Housing Starts

A bill in the Ohio legislature, is being blamed for the sharp reduction in homebuilding in some areas of the state.

The new bill spells out methods of financing sewer and water extensions. It stipulates that 50% of the cost of sanitary installations must be obtained by direct assessment from benefiting property owners—the balance to be obtained from users.

Developers claim the law is a hardship for them. Since there are no "users" until the houses are built and occupied, the builder must bear the entire cost himself. And most builders are unwilling or unable to bear these added costs.

One of the problems is said to be in the wording of the law. Seven builders owning 700 acres in Washington Township near Dayton, who offered to pay 100% of installation cost, were unable to get water and sewer lines because there were no users. The law specifies that 50% of the cost be assessed against the "users."

Consultant to Streamline Right-of-Way Procedures

Pennsylvania's Highway Department, to meet more efficiently the demands of the interstate highway program, has retained a consultant to study its right-of-way operation and recommend how it can be organized to handle a heavier volume of work.

The consultant is Henry J. Kaltenbach, president of Right-of-way Legislative Consultants, Inc., Washington, D. C., and a former general counsel for the U. S. Bureau of Public Roads.

"Much of the expanded interstate highway system will be on new location," explained the state's Highway Secretary, Lewis M. Stevens. "That means acquisition of right-of-way is one of the most immediate and pressing problems confronting the department." Mr. Kaltenbach's particular interest, he continued, will be in finding procedures to assure equitable treatment for all property owners.

Mr. Kaltenbach has agreed to complete the survey by July 1 and will be paid $8,500.

April Start Is Planned For Toronto Development

Toronto's $75 million real estate development known as Thorncliff Park will get under way this month. The first contracts to be awarded are for a $1 million high-level bridge over the Don River and for installation of roads, sewers, water mains and street lighting. Developers then will begin construction of about 500 units of apartments and the shopping center.

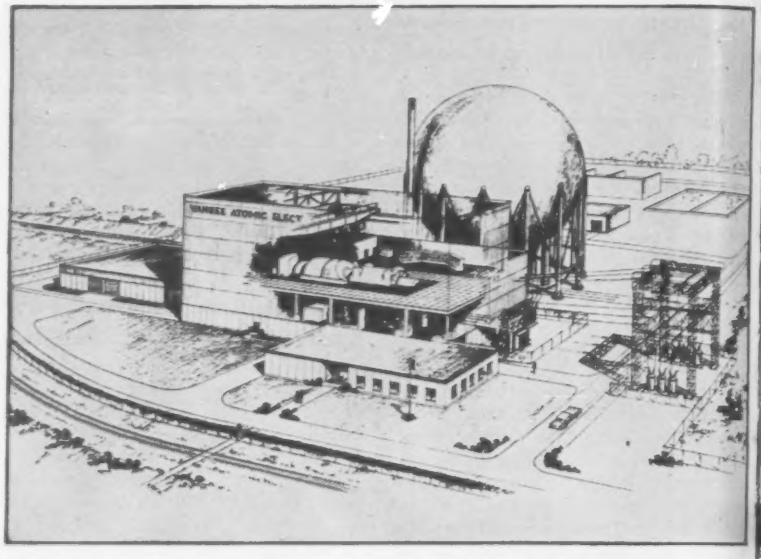
The development will include apartments, office buildings, light industry, schools and churches and shopping facilities in a total area of 338 acres (ENR Oct. 3, 1957, p. 102).

Business Briefs...

• **Record earnings**—F. H. McGraw & Co., engineers and contractors, reported record earnings for 1957 with a total of $1.3 million, or $3.01 a share, as compared to $529,554, or $1.24 a share, in 1956. However, its engineering and construction backlog as of January 1 was $115.6 million compared to $231 million on the same date of 1956.

• **Foreign hydro equipment**—English Electric Co. of Great Britain has just taken more of the Priest Rapids hydro equipment business. It received a $5.5 million contract for two turbine-generator sets, which is in addition to eight generating sets and five transformers worth $25 million it already is supplying.

In building New England's first atomic power plant–an experiment in costs–labor is being called upon to give a high degree of efficiency and cooperation.



Smooth construction of Yankee power plant is the goal as . . .

What a Pre-Job Conference Is and How It

Containing something old and much that's new, New England's first atomic power plant will soon take shape in a little town 100 miles northwest of Boston, Mass.

First insurance against unnecessary labor costs was taken out last month, when Stone & Webster Engineering Corp., world-wide engineers and constructors of Boston, held a pre-job labor conference for unions that may have members working on the project.

The 134,000 kw plant, using a pressurized water reactor similar to the one in the submarine Nautilus, should be producing electricity for 12 utility companies in six states by the end of 1960. It is being built on a 2,000 acre site in Rowe, Mass., for Yankee Atomic Electric Co., which was formed by the 12 utilities. A construction permit was issued by the Atomic Energy Commission last November. Stone & Webster and Westinghouse Electric Corp. are in charge of engineering and construction.

From now until the final tests are run, every effort will be made to keep construction costs down. As an experimental project, the stakes are high–economical use of nuclear energy for peaceful purposes.

Proceeding on the theory that knowledge and understanding can forestall many labor problems, Stone & Webster gave the unions with whom it may be working a chance at the pre-job conference to look at the project and to assess its implications.

For many of the workers, some of the work will be completely new. Homes and union headquarters for some will be many miles away. Hiring practices, working conditions, travel pay, jurisdiction, work practices, national labor agreements all suggest problems that may arise and call for pre-job solutions.

"These," said Stone & Webster at the pre-job conference "are the essential details of the project we are going to build jointly. This is our construction timetable. These are our estimated manpower needs. This is how we plan to operate. What questions do you have, what problems do you foresee? Let's iron them out before we get started."

• **Plant**–For nearly three hours, key engineers, personnel and construction men on the Stone & Webster staff, using charts, slides, graphs and models, explained the $57 million Yankee Atomic project in detail to the conference participants.

Here are the highlights of the picture they painted:

Except for the nuclear reactor and the complex systems it requires, the plant will contain the conglomeration of materials and equipment common to most generating plants. Essentially it will be a standard steam-electric station in which the conventional boiler has been replaced by a pressurized water reactor.

Its most spectacular unit will be a 125 ft painted steel sphere, called the vapor container, housing the nuclear complex called the primary system.

Hub of the system is the reactor vessel–a 175 ton water filled pressure vessel with walls of 8 in. steel–containing the reactor's 6 ft by 8 ft cylindrical core. It is here that pellets of enriched uranium oxide, encased in some 20,000 pencil-sized stainless steel tubes 8 ft long, will do the work of thousands of gallons of oil or tons of coal.

Water circulating around the core under 2,000 psi pressure will be heated by energy released by atomic fission and pumped through a heat exchange boiler to produce the steam that will drive the turbines to generate the electricity.

Piping for the reactor's main coolant system, as well as its hermetically sealed pumps, will be stainless steel. Reactor and coolant systems will be shielded by concrete walls 5 and 4 ft thick. Another concrete shield will be installed in the main control room and, as an additional safety factor, personnel hatches in the vapor container will be locked when the reactor is in operation.

A number of intricate auxiliary systems form part of the primary system. These will serve such purposes as purifying the water used in the primary system, disposing of nuclear waste, con-

. . . Management explains project to Labor and asks its help in avoiding unnecessary problems.

It Works

trolling atmospheric conditions in the vapor container, regulating the reactor and detecting radiation.

Next to the vapor container will be a main building with a concrete base and a steel frame with walls of insulated metal panelling; a service building of painted concrete block; and an office building with two walls of porcelain over aluminum. Partitions of office and service buildings will be concrete block.

• **Timetable**—The site has already been cleared, the earth moving completed, the field office erected, the well for site use drilled. Subcontracts for the structural steel, for the vapor container and for the electrical work have been let. Foundation work is about to enter the concreting stage.

Steel erection is scheduled to begin July 1 and work on the vapor container by the end of the year.

Bulk of construction work will be done between mid 1958 and the fall of 1959. Preliminary testing will commence January 1960 and operation of the plant is scheduled for December 1960.

• **Manpower**—It is estimated that the project will require a peak labor force of approximately 800 workers—the peak probably being reached in June 1959.

Key trades will be ironworkers, boilermakers, electrical workers, pipefitters and millwrights. Varying numbers of asbestos workers, bricklayers and cement finishers, carpenters, laborers, operating engineers, painters, sheet metal workers and teamsters will be needed.

Majority of the work will be done by Stone & Webster forces.

• **Labor relations**—With the project's construction details and manpower needs as a background, the conference then plunged into the subject of primary interest—labor relations.

What can the workers expect from Stone & Webster? What labor problems may prove troublesome? How can they be avoided?

Initial emphasis was placed on construction safety, and labor representatives at the conference were told that workers will be expected to cooperate in a rigorous accident prevention program. Stone & Webster said it has a superior safety record and considers the safety of its work force a matter "of great importance."

As at other Stone & Webster projects, a joint safety committee (representing the supervisory staff and craft workers on the job) will be set up. Committee members will be assigned to roving safety patrols that will periodically tour the project to spot hazardous conditions and to see that safety instructions are enforced.

More touchy and controversial labor problems—such as hiring procedures, work practices and jurisdiction—were outlined by Stone & Webster's personnel manager, Fred R. Stevens, who has had 17 years of broad and varied experience with construction labor problems. Avoiding double talk of any kind, he had this to say about the more important issues:

▶ **National agreements** — Stone & Webster has national labor contracts with 11 international building trades unions. Oldest one is with the bricklayers and dates back to 1911.

Wherever national contracts apply at the Yankee project, Stone & Webster will attempt to conform to and enforce their "terms and spirit to the best of its ability."

By its terms the national contract with the plumbers and pipefitters union will take precedence over local agreements for those trades. In other cases, conflicting provisions of local contracts are supposed to yield to the national agreements.

Local unions that may have members at the project were requested to send copies of their local labor contracts to Stone & Webster immediately.

▶ **Hiring**—In its labor practices, Stone & Webster has attempted to comply with the law and will continue to do so. It has and will use union facilities in its search for skilled labor but cannot use them exclusively.

Every effort is being made to see that hiring clauses in its current labor contracts are within the law as interpreted by the National Labor Relations Board, which threatens to impose a stiff penalty (known as the Brown-Olds rule) on both unions and contractors

for violations involving discrimination against nonunion workers after June 1. (As applied to the Rowe project, this means that Stone & Webster cannot accept local contract clauses requiring the hiring of union members only.)

The serious implications of the Brown-Olds rule, Stone & Webster feels, must be understood in advance of the Rowe operation. They are being explored as a legal problem by the National Constructors Association, of which Stone & Webster is a member. Questionable hiring clauses in national labor contracts are expected to be resolved by NCA and union attorneys at the national level.

▶ **Work practices**—The Rowe project is an experimental and sensitive one and Stone & Webster does not want excessive labor costs, if any, laid at its doorstep or at that of its work force.

It "likes" a 10 point code of work practices that was recently adopted by the AFL-CIO building trades unions to eliminate unnecessary waste and "hopes" the Yankee project workers will adhere to it. The code, which covers various featherbedding practices as well as strikes and stoppages, was read at the conference by Mr. Stevens, who said Stone & Webster will cooperate fully in union efforts to enforce it.

Of particular importance to the Yankee project is the code's tenth point calling for settlement of disputes or grievances without strikes or stoppages. Stone & Webster "has a procedure for settling every conceivable kind of dispute" and these will be available to workers on the power plant.

▶ **Jurisdiction**—Even on conventional aspects of the project, "borderline" cases can be expected in work assignments. But in some of the project's unique phases it may be a case of "complete wonder" as to which craft should do which work.

In all cases, Stone & Webster will make the work assignments and will be guided by every available precedent it can find, including decisions of the National Joint Board for the Settlement of Jurisdictional Disputes (of which Mr. Stevens is a member), international union agreements, and basic understandings reached in similar situations elsewhere.

Unions that will be associated with the Rowe project were asked to do two things: Resolve possible jurisdictional conflicts before the job starts; use the machinery of the Joint Board, to which Stone & Webster as well as all the unions are committed, to settle jurisdictional disputes arising after the job starts. (Under Joint Board procedure, unions are pledged not to engage in jurisdictional strikes.)

Armed with the detailed facts and information presented at the conference, the 34 labor leaders representing 14 local and international unions that may be associated with the project, now have a chance to evaluate some of the questions and problems the job may pose.

Through subsequent conferences, either in the ranks of labor itself or with Stone & Webster, solutions to many individual union problems may be found before construction starts.

This was the basic purpose of the pre-job conference. Only time, of course, will tell to what extent it achieves its goals. But by the time the conference ended, it looked as if the Yankee project would bear the fruits of labor peace and harmony.

Hiring Practices

Labor board sets up some new guides for deciding legality of hiring halls

This week, the National Labor Relations Board supplied unions and contractors with a precise set of terms under which a lawful union hiring hall can be maintained.

"Unfettered union control over all hiring" will not be tolerated, the NLRB says, although it gives its assurance that it does not intend to put an end to all hiring halls.

The decision, which has been anxiously awaited by the construction industry because of the NLRB's recent resurrection of a punitive doctrine called the Brown-Olds rule, sets up these guidelines for employers and unions entering into hiring hall agreements:

- "Selection of applicants for referral to jobs shall be on a non-discriminatory basis and shall not be based on, or in any way affected by, union membership . . . or any other aspect or obligation of union membership, policies or requirement."
- "The employer (must retain) the right to reject any job applicant referred by the union."
- Whenever a hiring hall is maintained hereafter, both union and employer must post "all provisions relating to the functioning of the hiring arrangement"—including an explicit statement that union membership, or other form of union recognition is not a prerequisite to referral.

The NLRB decided last December to outlaw closed-shop hiring halls. Until now, only the dissenting opinion of board member Abe Murdock had been issued (ENR Feb. 6 p. 108). This week, it followed through—in the same case—with its formal opinion explaining why and setting out ground rules for legal hiring halls of the future.

The case involved three principals: (1) Cyrus Lewis, a laborer, who made the initial complaint; (2) the International Hod Carriers Union (AFL-CIO), and (3) the Seattle and Tacoma Chapters of Associated General Contractors of America, Inc.

Mr. Lewis, an ex-member of the union who had been dropped for nonpayment of dues, tried and failed to find work through the union's hiring hall in the spring of 1956. The NLRB said Mr. Lewis was not only refused referral to construction jobs but also denied reinstatement by the union. Once, the record shows, a union representative threatened to picket a project—being done by a contractor who was not a member of the AGC—where Mr. Lewis found employment.

NLRB gives a broad interpretation to Section 8 (a) (3) of the Labor Relations Act which outlaws discrimination aimed at encouraging union membership. In justification of future union hiring halls along the lines it prescribes, the board says:

"We recognize that a procedure requiring application for employment through a union tends to encourage union membership—in fact, it gives to unions a ready forum for organizational activities . . . (but) we would draw a line between the type of unfettered arbitrary hiring hall present here and one including the safeguards set forth above.

"The first case, revealing an unexplained and autocratic union fiat, fully warrants an inference of unlawful encouragement (of union membership) despite the absence of literal membership requirements; the latter situation, with its assurances to would-be employees of selection based on objective criteria and specifically rejecting union membership or adherence as a basis for selection, effectively rebuts any inference of unlawful union encouragement and, therefore, does not support an inference of illegality."

Federal Court Enjoins Union Drive Ordinance

A federal court has issued an injunction preventing the City of Falmouth, Ky., from enforcing an ordinance that requires the licensing of union organizers.

Like a number of its counterparts in the South, the ordinance imposes a $2,500 license fee for organizers. It also requires that organizers be community residents of five years standing.

Organized labor claims the measure is discriminatory and unconstitutional.

'Our third Cleveland –based on 15 years of dependable performance'

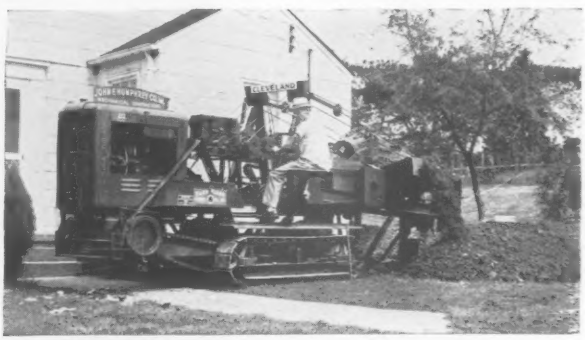
Still in good working order, the Cleveland trencher traded-in by John F. Humphrey Co. of Knoxville, Tenn. on the purchase of a new Cleveland 95 several months ago had been in steady use since 1942. "The purchase of our newest Cleveland—our third—was based on the 15 years of dependable, profitable performance delivered by our first Cleveland," says C. E. Hankins, Jr., vice president of the firm.

Shown cutting an 80-foot service line for 4-inch pipe is Humphrey's newest "95."

The firm is able to schedule more such jobs daily because the Cleveland's fast, safe truck-portability and its wide range of more than 30 usable digging speeds make it fast *to* the job and fast *on* the job.

Long-lived dependability like this is a Cleveland characteristic—one that makes your original investment pay dividends over a long, busy working life. Get complete information from *your* distributor now.

"There's nothing like a Cleveland for trenching."



Good Everywhere

The CLEVELAND TRENCHER Co.

20100 St. Clair Avenue • Cleveland 17, Ohio

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: April 24, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 24th day of April 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery	M 58-5	Work at Dam No. 11 on Barge Canal at Fort Plain	....	Furnishing and Installing New Uprights and Other Miscellaneous Work	$9,000 Plans $10	$175,000
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 41)	FARC 58-19	McGrawville, S.H. 378 McGrawville-Solon, S.H. 5436 Project F-525(3)	2.07	Asphalt Concrete, Type 1A=2.07 Miles	$27,000 Plans $2	$504,000
Tompkins (Rte. 96)	FARC 58-14	Trumansburg-Ithaca, S.H. 616 Project F-128(3)	1.43	Asphalt Concrete, Type 1A=1.43 Miles	$8,000 Plans $2	$143,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	M 58-4	Barge Canal Wall at Bushnell's Basin	....	Repairing and Rebuilding Portions of Canal Wall	$8,000 Plans $10	$152,600
Monroe	M 58-3	Barge Canal Bridges E-127 and 137	....	Cleaning and Painting 2 Bridges	$300 Plans $10	$5,600
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Building, 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17)	FAC 58-5	City of Jamestown: East Second Street (Tiffany Ave. to Winsor St.) Project F-449(8)	1.61	Asphalt Concrete=1.60 Miles Miscellaneous Work=0.01 Mile	$11,000 Plans $2	$205,000
Erie (Rte. 398)	FASCE 58-1	Seajaquada Creek Expressway: Section 2 (Niagara St. to Delaware Ave.) Project U-UG-1087(3)	1.91 (1.95 Acc.)	Asphalt Concrete=1.37 Miles; Miscellaneous Work =0.54 Mile; 5 Twin Box Culv. Each 20' Wide; 2 H.G.S. Welded Plate Girders 257', 279.9'; 1 R.R.G.S. Welded Plate Girder 222.6'; 2 Bridges—Rolled Beam Girder 90', 160'; 1 Bridge—Welded Plate Girder 139'	$400,000 Plans $10	$7,315,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Building, 30 West Main Street, Hornell, New York						
Steuben (Rte. 70)	FARC 58-20	Big Creek, Pts. 1 & 2, S.H. 906; Big Creek, Pt. 3, S.H. 1000A; Big Creek, Pt. 4, S.H. 907; Bath-Avoca, S.H. 5204. Project F-867(4)	5.58	Asphalt Concrete (and Bridge Repair)=5.42 Miles Miscellaneous Work=0.16 Mile	$50,000 Plans $5	$944,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rte. 11)	FARC 58-15	Philadelphia-Antwerp, S.H. 5548 Antwerp-County Line, S.H. 5427 Project F-476(6)	6.63	Asphalt Concrete=6.63 Miles	$77,000 Plans $5	$1,400,000
St. Lawrence (Rte. 37)	FARC 58-13	Massena-Helena, Pt. 1, S.H. 1261 Project F-580(12)	2.08	Asphalt Concrete, Type 1A=1.97 Miles Miscellaneous Work=0.11 Mile	$55,000 Plans $3	$990,000
St. Lawrence	OBA 58-4A	*Ogdensburg Bridge: Contract No. 4A	....	U.S. Approach Spans Superstructure; 6 Truss Spans @ 251.3' Each: 2-4 Span Continuous Girders @ 510' Each	U.S. $169,000 Plans $3	U.S. $3,077,230
Grenville, Ontario, Canada	OBA 58-4C	*Ogdensburg Bridge: Contract No. 4C	....	Canadian Approach Spans Superstructure; 6 Truss Spans @ 251.3' Each: 2-3 Span Continuous Girders @ 382.5' Each	U.S. $180,000 Plans $3	U.S. $3,223,775

*Note Well: The Plans and Proposals for Contracts OBA 58-4A and OBA 58-4C Will Be Available at P. L. Pratley, Cons. Engr., 909 Drummond Bldg., Montreal, Quebec, Canada: and Modjeski and Masters, Cons. Engrs., Forster at Sixth, Harrisburg, Penn., as well as the N.Y.S. D.P.W. Offices Listed.

DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York.						
Otsego (Rte. 28)	FARC 58-16	Colliersville-Milford Center, S.H. 318; Milford Center-Milford, S.H. 674; Milford Village, S.H. 783 Project F-469(3)	8.21	Asphalt Concrete, Type 1A=8.21 Miles; Widen 2 Reinf. Conc. Beam Bridges Spans 24.7' and 30'	$79,000 Plans $10	$1,438,000
DISTRICT No. 10, M. E. GOTT, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau (Rte. 27)	RC 58-21	Conduit Blvd., Pt. 3, S.H. 1699A	0.00	Twin Elliptical Concrete Pipe Culvert	$2,300 Plans $2	$42,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defence Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: April 10, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 10th day of April 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name
DISTRICT No. 10, M. E. Gould, District Engineer, 325 West Main Street, Babylon, L. I., New York.		
Queens	HHE 58-1	Horace Harding Expressway; Section 2, Contract 6 (Douglaston Pumping Station)

Miles	Type	Deposit	Estimated Cost of Work
-	Construction of Pumping Station Building and Improvement of Grounds	$20,000 Plans $3	$365,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.
In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.
Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.
The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.
Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.
Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".
The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: May 6, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
for the
Construction of Work Section No. 1
of the Waterways
In
Niagara Falls
Niagara County, New York
Specifications No. PA-N-23005
Niagara Contract No. N5

NOTICE TO CONTRACTORS:
The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Construction of the Waterways Work Section No. 1 and appurtenant works, located in Niagara Falls, Niagara County, New York, on May 6, 1958, at 10:30 A.M., E.D.S.T., at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and real aloud.
The principal items of work are as follows:

7,350,000 cu. yds.	Excavation, unclassified
375,000 lin. ft.	Drill holes for anchor bars, exploration & grouting
673,000 cu. yds.	Concrete
37,750 tons	Reinforcing steel
93 tons	Miscellaneous metalwork
1,104 tons	Erection of structural steel
1,600 tons	Erection of gates, gate and stop log guides & hoists

All work shall be completed on or before one thousand ninety-six (1096) calendar days after the date of receipt of Notice of Award.
Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set of contract documents, and Twenty-five ($25.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.
Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid.
The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: April 18, 1958.

Department of Forests and Waters Commonwealth of Pennsylvania

CONEWAGO DAM ON BEAVER CREEK
York County, Pennsylvania
CONTRACT NO. R 67:1-101.1

Sealed bids for constructing an earth dam will be received at the office of the Secretary of Forests and Waters, Room 512, Education Building, Harrisburg, Pennsylvania, until 2:00 P.M., E.S.T., April 18, 1958, at which time said bids will be publicly opened and read in Room 200, Education Building. The principal items of work include:

Rock Excavation	30,920 c.y.
Rock embankment	27,000 c.y.
Earth embankment	74,000 c.y.
Concrete	1,944 c.y.
Reinforcing steel	131,245 lb.
Excavation & Stripping	29,890 c.y.
Filters	3,040 c.y.
Core drilling	5,700 l.f.

Each bidder must submit an experience record, bid deposit, and equipment statement.
Contract documents may be examined free-of-charge or obtained from the Division of Flood Control, Department of Forests and Waters, Room 465, Education Building, Harrisburg, Pennsylvania, upon payment of twenty dollars ($20.00) for each set, which payment WILL NOT be refunded.

MAURICE K. GODDARD
Secretary, Department of
Forests and Waters
Commonwealth of Pennsylvania

OFFICIAL PROPOSALS

Bids: April 21, 1958.

Boro of Manasquan County of Monmouth, New Jersey

Notice is hereby given that sealed bids will be received by the Mayor and Council of the Boro of Manasquan for the installation of a sewerage system and appurtenances and other work incidental thereto and opened and read in public at the Boro Hall, Manasquan, New Jersey on April 21, 1958 at 8 o'clock P.M.
Drawings, specifications, and form of bids, contract and Bond for the proposed work prepared by Otis R. Seaman, Boro Engineer, have been filed in the office of said Engineer at 485 Broadway, Long Branch, N. J., and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of the drawings and specifications by the Engineer upon proper notice and payment of a deposit of twenty-five ($25.00) Dollars.
Bids must be made on the Standard Proposal Forms in the manner designated therein as required by the specifications; must be enclosed in sealed envelopes bearing the name and address of the bidder and name of work on the outside, addressed to the Mayor and Council, Boro of Manasquan and must be accompanied by a Bonding Certificate and a certified check drawn to the order of the Boro treasurer for not less than ten (10%) per cent of the amount bid, and be delivered at the place and on the hour above named. The Standard Proposal Forms will be furnished upon application to the Engineer.
The award of the contract for this work will not be made until necessary monies to do the work have been provided by the Borough in a lawful manner.
The Boro Engineer and the Mayor and Council reserve the right to require a complete financial and experience statement from prospective bidders before furnishing proposal forms or specifications, or before awarding contract in accordance with R.S. 40:50-5. The right is also reserved to reject any or all bids, or to waive any informalities, where such informality is not detrimental to the best interests of the Boro of Manasquan. The right is also reserved to increase or decrease the quantities specified.
By order of the Mayor and Council of the Boro of Manasquan, New Jersey.

E. DONALD OSBORN, Mayor
V. MILLER PRESTON, Clerk

Bids: April 10, 1958.

Contract No. R11:1-101.1 Department of Forests and Waters Commonwealth of Pennsylvania Glendale Dam on Beaverdam Run Cambria County, Pennsylvania

Sealed proposals for constructing an earth dam and appurtenant structures for the above flood control and recreational project will be received at the office of The Secretary of Forests and Waters, Room 512, Education Building, Harrisburg, Pennsylvania, until 2:00 P.M., E.S.T., April 10, 1958, at which time said proposals will be publicly opened and read.
The principal items of work include:

Rolled Embankment	630,000 c.y.
Concrete	4,600 c.y.
Reinforcing Steel	420,000 lb.
Excavating, Stripping and Grubbing	162,000 c.y.
Filters	37,500 tons
Rock Facing, Riprap	25,700 c.y.
1¾" Diamond Drilling	10,000 l.f.

Each bidder must submit an experience record, bid deposit, and equipment statement.
Contract documents may be examined during office hours at the Division of Flood Control Office, Department of Forests and Waters, Room 465, Education Building, Harrisburg, Pennsylvania, and at the office of the Consulting Engineers, Gannett, Fleming, Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Pennsylvania. Contract documents will be furnished upon payment of forty dollars ($40.00) for each set, upon application to the Division of Flood Control, Department of Forests and Waters, Contract documents need not be returned and the payment WILL NOT be refunded.

MAURICE K. GODDARD
Secretary, Department of
Forests and Waters
Commonwealth of Pennsylvania

OFFICIAL PROPOSALS

Bids: April 22, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF
ROADS, PARKING AREAS, AND
UTILITIES FOR
HOUSES, INFORMATION CENTER,
BATHHOUSES AND OVERLOOKS
NEAR MASSENA,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-11036
ST. LAWRENCE CONTRACT NO. SP2

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the roads, parking areas, and utilities for houses, Information Center, bathhouses and overlooks, near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Standard Time on the 22nd day of April, 1958 at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

The principal work consists of the construction of approximately 1.7 miles of access roads, approximately 13 acres of paved parking areas complete with all underground electrical facilities, drainage systems, water systems, sewerage systems for six operators' houses, Barnhart Island Beach Bathhouse, Barnhart Island Overlook on Barnhart Island, and the Superintendent's residence, Information Center, Massena Beach Bathhouse and Hawkins Point and Long Sault Overlooks on the New York Mainland.

All work shall be completed on or before December 31, 1958.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-five ($25.00) dollars per initial set and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office, and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: April 17, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
for the
Construction of the Barnhart Island Park
Lighting and Distribution Facilities
Near Massena
St. Lawrence County, New York
Specification PA-5-14044
St. Lawrence Contract No. 45

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the complete installation of the Barnhart Island Park Lighting and Distribution Facilities until 10:30 A.M., Eastern Standard Time on the 17th day of April, 1958, at the Authority's office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated as follows:

Installation of 169 roadway luminaires complete.
Installation of 127,000 feet of direct burial cable.
Construction of 3 vaults, 1 transformer station and 3 wood pole structures
Construction of 500 feet of 13.8 kv single circuit overhead line.
Removal of approximately 10 miles of 115 kv and 13.8 kv overhead lines.
Removal of a construction power substation and two load centers.

The work shall be completed on or before September 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars for initial set of contract documents, and Five $5.00) dollars for each additional set, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: May 20, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
for the
Construction of Work Section No. 3
of the Waterways
In
Lewiston and Niagara
Niagara County, New York
Specifications No. PA-N-23005
Niagara Contract No. N7

NOTICE TO CONTRACTORS:

The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Construction of the Waterways Work Section No. 3 and appurtenant works, located in Lewiston and Niagara, Niagara County, New York, on May 20, 1958, at 10:30 A.M. E.D.S.T. at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are as follows:

4,595,000 cu. yds.	Excavation, unclassified
489,300 lin. ft.	Drill holes for exploration and grouting
446,000 cu. yds.	Concrete
22,500 tons	Reinforcing steel

All work shall be completed on or before one thousand ninety-six (1096) calendar days after the date of receipt of Notice of Award.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set of contract documents, and Twenty-five ($25.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: April 17, 1958

Soil Explorations and Foundation Investigation

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on April 17, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CLEARVIEW EXPRESSWAY, FEDERAL INTERSTATE ROUTE 513, HILLSIDE AVENUE TO THROGS NECK BRIDGE, PROJECT 1-1112(1), ITEM 19B, QUEENS COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-120.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, N. Y.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $69,400.00

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $4,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF
PUBLIC WORKS

Bids: April 10, 1958.

Delaware River Port Authority of the Commonwealth of Pennsylvania and the State of New Jersey

Administration Building
Camden, New Jersey
BENJAMIN FRANKLIN and
WALT WHITMAN BRIDGES—
CONTRACT NO. 101

Sealed bids will be received for TRAFFIC LANES OPEN SIGNS for the Benjamin Franklin and Walt Whitman Bridges, known as Contract No. 101, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:30 P.M., Eastern Standard Time, Thursday, April 10, 1958, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $3,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place or business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
EXECUTIVE DIRECTOR

OFFICIAL PROPOSALS

Bids: April 15, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF THE
115 KV SUBMARINE CABLE
INSTALLATION
SPECIFICATION NO. PA-6-45
CONTRACT NO. T9

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the complete installation of the 115 kv Submarine Cable Crossing between Cumberland Head, New York and Grand Isle, Vermont, until 1030 A.M. Eastern Standard Time on the 15th day of April 1958, at the Authority's office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated:

Construction of 115 kv submarine cable terminals at Cumberland Head, New York and Grand Isle, Vermont, including complete installation of cable terminal equipment.

Complete installation of 36,000 feet of oil filled 115 kv submarine cable in four (4) lengths of approximately 9,000 feet each.

The work shall be completed on or before September 1, 1958.

Plans, Specifications and Proposal Forms for the work may be obtained only from the Power Authority of the State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of ten dollars ($10.00) for initial set of Contract Documents and Five Dollars ($5.00) for each additional set, no part of which will be refunded. Two sets must be returned with each bid. Plans, Specifications and Proposal Forms will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, for the inspection by prospective bidders.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN,
General Manager

Bids: May 13, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF WORK SECTION NO. 2 OF THE WATERWAYS IN NIAGARA AND NIAGARA FALLS
NIAGARA COUNTY, NEW YORK
SPECIFICATIONS NO. PA-N-23005
NIAGARA CONTRACT NO. N 6

NOTICE TO CONTRACTORS:

The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Waterways Work Section No. 2 and appurtenant works, located in Niagara and Niagara Falls, Niagara County, New York, on May 13, 1958, at 10:30 A.M., E.D.S.T. at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are as follows:

5,085,000 cu. yds.	Excavation, unclassified
395,000 lin. ft.	Drill holes for exploration and grouting
610,000 cu. yds.	Concrete
34,250 tons	Reinforcing steel

All work shall be completed on or before one thousand ninety-six (1096) calendar days after the date of receipt of Notice of Award.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set of contract documents, and Twenty-five ($25.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
General Manager

Bids: April 22, 1958

Contract NYA-970.007

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
HANGAR NO. 17
SALE OF STRUCTURAL STEEL

Sealed proposals for the sale of structural steel for Hangar No. 17 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 22, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 3, 1958

Bids: April 22, 1958

Contract NYA-970.008

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
HANGAR NO. 17
ERECTION OF STRUCTURAL STEEL

Sealed proposals for the erection of structural steel for Hangar No. 17 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 22, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 3, 1958

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4978) will be received at Oak View, California until May 1, 1958, for furnishing labor and materials for Steel or Prestressed Concrete Tanks for Oak View, Villanova, Ojai East, Upper Ojai, and Rincon Reservoirs, California, Ventura River Project. Location Ventura, California in Ventura County. Principal items are 83,500 cu. yds. excavation; furnishing and erecting 6 steel or prestressed concrete tanks; and other work. The tanks vary from 250,000 to 3,500,000 gallons in capacity. The work is divided into 12 schedules (6 alternates). Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 97, Oak View, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Employment Opportunities

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Sales Engineer to introduce outstanding product in sanitary and water supply fields. Young, aggressive, well-financed company. Salary open. Location: Southeast. P-7437, Engineering News-Record.

A growing architectural-engineering and building firm has an opening for mechanical-electrical engineer. Must have had experience in design and supervision of mechanical and electrical equipment for industrial building and processing. Permanent position—excellent working conditions. Reply with complete resume—P.O. Box 349, Princeton, New Jersey.

Chief Civil Engineer—Highways. Extensive administrative experience, modern highway design, either former state highway or consulting engineering experience acceptable. Salary high. Bonus incentive. P-7453, Engineering News-Record.

General Contractor wants man experienced in estimating, bidding, and supervising construction in sewer work, sewage treatment plants, bridges and other related items. This is new department. Location Ohio and adjacent areas. All replies should state complete information regarding education, experience, previous employers, and salary expected. P-7566, Engineering News-Record.

Wanted: Civil Engineer or Geologist, single, under thirty, to handle soil borings and aggregate investigations throughout U. S. Salary $125.00 per week plus travel expenses. Western Contracting Corporation, Sioux City, Iowa.

Field Engineer and Surveyor wanted to supervise and direct bridge construction in Columbus, Ohio area. Must be Registered. P-7608, Engineering News-Record.

Wanted—Competent engineers and draftsmen for work to produce plans for filtration plants and/or sewage treatment plants. Advise when can report, state age, experience, salary expected. P-7607, Engineering News-Record.

Experienced miscellaneous and ornamental iron estimator or detailer to take complete charge of drafting department, including all purchasing and expediting. Please give complete resume of experience, age, and salary expected in first reply. P-7613, Engineering News-Record.

Experienced Sewage Treatment Superintendent, activated sludge plant 4 years old 5 m.g.d. capacity. Send experience and training resume to Director of Public Works, Enid, Oklahoma.

Civil Engineers: Have openings for young, aggressive, ambitious Civil Engineer college graduates for field construction work in Mid-Western Area of the U.S. P-7667, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y. April 17th issue closes April 7th

GRADUATE CIVIL or ARCHITECTURAL ENGINEERS

We are looking for a young, recent college graduate, with a degree in either architectural or civil engineering, for a position in our El Paso, Texas—Estimating Department. This position provides a training ground for our future superintendents and executives. It is an excel'ent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
PO BOX 562 EL PASO, TEXAS

ENGINEERS

Foreign Employment

MAINTENANCE, SCHEDULING & PROGRAMMING

Career opportunities for graduate engineers with minimum 6 years experience supervising maintenance engineering functions in oil refining or producing facilities, power plants, heavy industrial installations and supporting community facilities. For work in Saudi Arabia as Staff Engineers. Also opportunity for engineers with production control experience.

High salary plus liberal all-inclusive benefits conducive to large savings. Excellent community facilities.

Write outlining background and experience. Please include telephone number.

Recruiting Supervisor, Box 215

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

REGISTERED PROFESSIONAL ENGINEER

$543 to $657 a month, including annual automatic and longevity salary steps. New position in traffic engineering. Experience and/or training in this field is desirable. Exam open to all U. S. citizens. Wisconsin Retirement Fund and Social Security Benefits. City Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

Field Engineers, Estimators Building Construction

Northern New York construction firm offers long range opportunities to civil engineers up to age 40 with experience in building construction for positions in estimating or field layout work.

John W. Rouse Construction Corporation
8 Church Street, Gouverneur, New York

MANAGERS, BRANCH OFFICES Domestic and Foreign Locations

Consulting engineer firm in power, water, sewerage, highways, airports, and industrial fields has openings in U. S. and Africa. Registered engineers with successful supervisory and sales experience are required.

P-7524, Engineering News-Record
529 North Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT
(Continued from preceding page)

Construction Man wanted. Preferably with degree in Civil Engineering from an accredited college. Ideal opportunity for young man in early or middle thirties to advance rapidly with expanding nationwide piledriving concern. Must be willing to travel. Salary commensurate with experience and ability. Profit sharing available after first year of full employment. P-7628, Engineering News-Record.

Civil Engineer, graduate, 2 to 4 years experience in reinforced concrete and structural design. Will work into prestress design. Leap Concrete, Inc., Box 1053, Lakeland, Florida.

Engineer—Water Conditioning Company has opening for experienced Engineer. Job entails responsibility for equipment selection and layout. Experience in working with Industries and Municipalities in Water and Waste Treatment fields required. Limited travel. Opportunity for advancement. Location—Central West. Give full details in first letter, salary, requirements, etc. P-7634, Engineering News-Record.

Construction Superintendent: Building construction superintendent, age 28 to 40, aggressive, ambitious, experienced, willing to move, for sizeable building projects. Give full information on experience and projects handled. P-7632, Engineering News-Record.

Contractors assistant for small progressive heavy const. Co. Prefer C.E. Estimating, fieldwork & supervision. Salary, with groundfloor opportunity to advance with Co. Send resume to P.O. Box #4, Vestal, New York.

Construction Engineer: 30-40, graduate structural engineer. Ambitious, aggressive man with experience in management, engineering, supervision, and estimating as applied to industrial, commercial, and institutional general construction. Excellent opportunity with old established company operating in the middlewest. Send resume of education, experience and salary desired. P-7656, Engineering News-Record.

Field Engineer to travel southeastern states for AA-1 company, will work with distributor organization contacting architects, engineers and contractors. 27-40 years old, civil engineering or construction background preferred. Selling experience desirable—salary, expenses and incentive. Send resume to P-7670, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P.O. Box 674, Manchester, Vermont.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-7501, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

OVERSEAS

An exclusive Association for foreign construction workers. Learn the advantages of becoming a member by writing for free descriptive details. Overseas Americans, Inc. Dept. N, 7 West 44th St., New York 36, N. Y.

POSITIONS WANTED

Consulting Civil Engineer, office in South Florida desires to represent national engineering firm in Florida and Caribbean area. PW-7422, Engineering News-Record.

Civil & Structural Engineer, 35, European background, German degree, 6 years U.S. experience in design of ind'l bldgs. U.S. citizen. Languages: English, German, Serbo-Croat, French. Desires position abroad. PW-7498, Engineering News-Record.

BSEE MIT PE NY 15 years exp. bldg & airport design & construction, electronics maintenance seeks connection involving occasional travel or assignment overseas, pref. Far East. PW-7563, Engineering News-Record.

Teaching position desired. Age 31, P.E. M.S. in San Engr. Exp: design of several sewage treat. plants (incl. $6 million plant under constr.); university instructor; highway engineering. PW-7551, Engineering News-Record.

Civil Engineer for technical sales. Young, Dutch-trained, seven years experience in heavy pre-fabricated and pre-stressed concrete construction, manufacture, estimation. PW-7593, Engineering News-Record.

Civil Engineer. Top record of 19 yrs. experience, heavy construction, municipal, and other, with some office. 2 yrs. college. Now resident engineer on sewage treatment plant and available on completion, July. PW-7603, Engineering News-Record.

(Continued on opposite page)

When Answering
BOX NUMBERS

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

POSITIONS WANTED

(Continued from opposite page)

Accountant Office manager experienced heavy construction Roads, Dams, Airfields, Water Lines, underground fuel systems, Industrial capable of saving any Contractor more than $10,000. in taxes a year. Age 48, go anywhere. Make your offer. Available April 21st. PW-7569, Engineering News-Record.

Construction Executive Superintendent 30 years experience all phases. Top man in organizing every type of project. A work planner not just an ordinary Supt. Florida or W. Indies. P.O. Box 3771, Sarasota, Fla.

Construction Supt 22 years experience all phases highway work. PW-7658, Engineering News-Record.

Steel Fabricators—Mid-Atlantic or New Eng. Thoroughly experienced Estimator & Pricer of Structural Steel & Misc. Iron (also Design & Detailing) wants position with Progressive Co., Age 35, presently employed, min. sal. $8,000. PW-7657, Engineering News-Record.

Purchasing—Well rounded experience in procurement for heavy construction and general contracting, good administrator and able to handle sub-contractor. PW-7663, Engineering News-Record.

Superintendent — 25 yrs. exp., highways, earthen dams. Location immaterial. PW-7662, Engineering News-Record.

Contractors Manager with ability to bid and organize heavy Construction and Buildings profitably under competitive conditions. Broad experience General Contracting Mid-West, South & West. PW-7660, Engineering News-Record.

Chief Draftsman. Structural Stl. Fab. Co., Heavy & Light Str. Exp. Desires similar or Chief Eng. position with established co. PW-7620, Engineering News-Record.

Civil Engineer available for foreign work preferably Europe. 5 years experience, U.S. & abroad, highway, earthwork, tunnel, construction, design, estimate, English & German perfect, Spanish. PW-7621, Engineering News-Record.

Engineer, BSCE, 28, 7 years exp. in highways, railroads, irrigation, structures, bidding, and estimating. Presently Chief Engineer for large US const. firm in Central America. Speak Spanish fluently, desire foreign employment. PW-7626, Engineering News-Record.

Civil Engineer with design, soils, construction, steel fabr. & arch. background desires position in sales or construction management. PW-7668, Engineering News-Record.

Construction or Carpenter Superintendent— 30 years experience in reinforced concrete. Factories, Disposal Plants, Refineries, Power Houses, Paper Mills and Housing Projects. Anywhere. Age 52. References. PW-7674, Engineering News-Record.

Soils & materials engineer; M.S(Soil Mech.) & M.S(Highwy. Engg.); about ten years design office & field experience; special experience in soils and foundations; regd. P.E.; present emoluments about $10,000 annual; single; 39; available April, any location. PW-7672, Engineering News-Record.

Foreign Assignment—Civil Engineer, now employed, 29 single, B.S.C.E., M.S. Soil Mechanics, 2 years field, laboratory and office experience inspection, testing and design of soils and concrete works. Speaks English, Greek. PW-7673, Engineering News-Record.

Civil Engineer, M.S.E. (CE) Age 35, wide experience in Foundation Design, Applied Soil Mechanics, Soil Mechanics and Highway Materials Laboratory Work, Airport Design and Specification Writing, Good organizer, wants to change position. Seeks responsible and challenging job in Design or Research in Canada only. PW-7671, Engineering News-Record.

Construction Superintendent 25 years experience in General Construction, Power Plants, Sewerage and water treatment including mechanical installations. From bid to completion Engineering background. Will relocate. PW-7676, Engineering News-Record.

WORK WANTED

P.E.'s desire structural design, estimating Construction Supervision, and Surveying. NW area. WW-7598, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — **EQUIPMENT USED or RESALE**

DISPLAYED —RATES— **UNDISPLAYED**

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

$2.40 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P O. Box 12, N. Y. 36, N. Y. April 17th issue closes April 7th.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

CONTRACT WORK WANTED

Bridges, Highways, Parking Garages, Parking Studies, Structural Design. James L. Konski Engineers, 304 Gridley Bldg., Syracuse, N. Y.

BUSINESS OPPORTUNITY

. . Land Surveying & Consulting Engineering Company For Sale, well established organization, excellent reputation now doing large volume business in land surveys and property surveys. Located in large mid-continent city, owner wishes to retire. Identify yourself completely in your inquiry. BO-7638, Engineering News-Record.

WANTED

ANYTHING within reason that is wanted in the field of Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year
Write today without obligation
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE MASS

ELECTRONIC COMPUTATIONS

Bendix G-15 computer available on service bureau basis for engineering computations.

- Earth work, traverses, highway geometrics
- Stress analysis, bridge design
- Hydraulics
- Traffic analysis

Programming available for other applications. For full information write to:

H. W. LOCHNER INC.
COMPUTER DIV.
20 N. Wacker Drive Chicago 6, Illinois
FRanklin 2-7346

SHOP DRAWINGS
ALEXANDER'S
310 Turner Place Ithaca, N. Y.
Phone 4-6796

AUCTION SALE

Sat. APRIL 12th *in the heart of New York City*

EACH PIECE POSITIVELY SOLD TO THE HIGHEST BIDDER!

CONSTRUCTION EQUIPMENT

TRACTORS • CRANES • LOWBOYS
SCRAPERS • TRUCKS • LOADERS
SHOVELS • BACKHOES • PUMPS
COMPRESSORS • ROLLERS
WELDERS, Etc
From New York's Leading Dealers & Contractors.

BANK FINANCING AT SALE SITE.

EQUIPMENT MART OF NEW YORK, Inc.
35-18 Laurel Hill Blvd., Maspeth, N. Y.
STillwell 6-8460

FOR RENT
3900 MANITOWOC LIFTCRANE
Only 9 months old—in excellent condition—70 ton capacity—160 foot boom—30 foot jib—torque convertor and manual control—located in western Pennsylvania—will move anywhere on long term lease.
STANDARD STEEL SERVICE, INC.
P. O. Box 929, Johnstown, Pa.
Phone 37-8451 or 37-7901

FOR SALE
1947, ¾ P & H
Truck crane now working or will trade for ¾ Yd. Crawler.
IRVING C. LATHAM,
Orient, L. I. N. Y.

FOR SALE
Parsons Mod. 310, 350 & 155 Ditchers
Buckeye Mod. 160, 120, 407, 212, C-15 & 51
Cleveland Mod. 95, 110, 140 & 320
Barber-Greene 44-C 8'3" Like new
Barber-Greene Roustabout
Cleveland W 80 Backfiller Tamper
Buckeye "F" Backfiller
FS-7642, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

Wanted
2—X66 BUTLER CONCRETE MIXING PLANTS
W-7644, Engineering News Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ALL SIZES
NEW • USED

HY DRACHMAN STEEL CORP.
STRUCTURAL STEEL

IMMEDIATE
DELIVERY
FROM STOCK

SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

The Contractors Steel Supply House
52-25 2nd Street, Long Island City, New York • RAvenswood 9-1262

STEEL IS OUR BUSINESS

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 to 20 TONS
SELL, RENT or BUY

ADD DAMS BRIDGES BREAKWATERS FILTRATION AND SEWERAGE PLANTS

ADD SPEED ECONOMY EFFICIENCY FLOOD SAFETY LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
330	MP-116	45 to 60 ft.	Chicago
300	MP-115	50 to 60 ft.	Chicago
210	MP-112	19 to 21 ft.	Kansas
157	MP-116	27 to 34 ft.	Colorado
262	MP-101	34 to 35 ft.	Nebraska
125	MP-116	19 to 24 ft.	Kansas City
160	MP-115	23 to 25 ft.	Missouri

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

Need A "Lift"?

CRANES, INC.

RENTALS

Manitowoc 3900's — Crawlers 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons.
Booms to 150 ft. Hoists-Welders-Generators

Maspeth 78, N. Y. ST 4-1776

H & STEEL SHEET PILING

4800 PCS BETH. SP6, A65' 50' 56' & 48'
264 PCS. MPI12—40' & 60'
447 PCS. BETH. AP 3—25 & 30, 40 & 60 FT.
416 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH.—ZP32—25' 36' 48' 55' & 62'
218 PCS. CARNEGIE MZ27—48 FT.
1500 PCS. BP12—BP14—55'-60'
300 PCS. 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS N. Y.—MASS.—TEX.—OHIO
LA.—FLA.—GA. & QUE.

PILE HAMMERS & EXTRACTORS

Vulcan 1200, 800 & 400 Extractors
IS McK-Terry, 6, 7, 9B3, 10B2 & 11B3

4 GANTRY WHIRLEY CRANES

25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.

LOCOMOTIVES FOR SALE
(Diesel Mechanical)

1—30 Ton Whitcomb (overhauled)
1—36 Ton Plymouth (1948)

MISSOURI CAR & LOCOMOTIVE CO.
8465 Halls Ferry Rd. St. Louis, Missouri

STEEL SHEET PILING

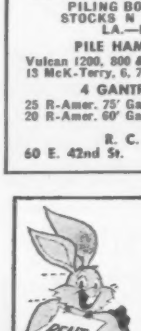
LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co.
Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING



"FASTER FROM FOSTER"

STEEL SHEET **PILING**

All sections from our regular stocks

L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

RAILS - TIE PLATES
Frogs & Switches—Track Accessories

W. H. DYER CO., INC.
Operating Nationally
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

RAILROAD Cross and Switch **TIES**

Promptly from adequate stocks
NEW and USED *(as available)*

GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

STEEL SHEET PILING—*FOR SALE AND RENT*

3000 pcs. Beth SP-6a 40' to 56'—practically new

Attractively priced—prompt shipment from New York State
a joint venture of

WHISLER STEEL PILING CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo.
CHestnut 1-4474

CONMACO, INC.
820 Kansas Ave.
Kansas City 5, Kans.
DRexel 1-3930

R. C. STANHOPE, INC.
60 East 42nd St.
New York 17, N. Y.
Murray Hill 2-3075

Phone or write any of the above

RELAY RAIL FOR SALE

300 tons—100 lb. ARA-A
600 tons— 90 lb. ASCE
accessories to match
LOCATION—Auburn, N. Y.
Other sizes available throughout U. S.

MERCHANTS STEEL & SUPPLY CO.
105 W. Madison St., Chicago 2, Ill., FR 2-5312

FOR RENT

Manitowoc Cranes

Models 2000-B, 3500 or 3900. 25 to 70 Ton Capacity—50′ to 125′ booms — 20′ or 30′ jibs — manual controls — independent booms — torque converters.

McCARRICK BROTHERS, INC.
1700 E. Ridge Pike P. O. Box 291
Norristown, Pa. Phone: Broadway 2-4231

RENTAL and SALE of

PILE HAMMERS & ACCESSORIES

Steam, Gasoline and Diesel Cranes
Steam Generators—Compressors
Pile Extractors

Distributors for Vulcan Iron Works, Inc.

HOWARD W. READ CORP.
4603 N. 4th St., Phila., Pa.
Tel. GLadstone 7-0700

CASH IN ON LARGE VOLUME BUYING!
SPECIAL SALE
40 BRAND NEW BUCKETS
Save up to 50%!

CLAMSHELL BUCKETS
14—3 yd. P.M. Model AB-1XE Hi Power ex. hvy duty, 1½" lips and 1½" bowl. Wt. 12,700# ea.
10—2 yd. Haiss gen. pur. hvy duty, 6400# ea.
6—2 yd. McCaffrey Mdl DLM, ex. hvy construction, 7320# ea.
5—2 yd. Erie Mdl X06, hvy. duty, Wt. 7505# ea.
1—2 yd. Yaun gen. purpose, 6816#.
1—2 yd. B.K. Mdl 724H gen, pur. Wt. 6700#.
(All above fitted with teeth and extra cwt.)

DRAGLINE BUCKETS
2—2 yd. Yaun Dragline buckets, med. duty, solid shell, weight 4200# ea.
1—1½ yd. Yaun heavy duty bucket, Wt. 3400#.
(All unused, in perf. cond. Prompt shipment).

ECA
EQUIPMENT CORPORATION OF AMERICA
Clifton Heights, Pa., Box 608J
Groveton, Pa., Box 43J
Chicago 4, Ill., 327J S. La Salle St.
New York 7, N. Y. 30J Church St.

FOR SALE

Michigan 75A

used approx. 500 hrs.
Excellent Condition.

L. G. COLLINS
P.O. Box 62 Greenwich, N. Y.

FOR SALE OR RENT

40 ton American Diesel Loco. Crane
65 ton Whitcomb Diesel Elec. Loco.
44 ton Whitcomb Diesel Elec. Loco.
25 ton Davenport Gas-Elec. Loco.
50 ton Amer. Guy Derrick, 115′ Mast, 100′ Bm.
90 HP Lidgerwood 2d Diesel Hoist w/Swinger
150 HP Amer. #140 3d Gas Hoist & Swinger
1½ yd. Lima 602 Diesel Crane. 110′ Boom.
60 ton Manitowoc 3900 Erection Crane. 140′ Bm.
110 HP Clayton Port. Steam Generator

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

FOR SALE
MANITOWOC MODELS 3500 & 3900
Liftcranes
Forsythe Equipment Co., Inc.
37-11 Vernon Blvd.
Long Island City 1, N. Y.

CRANES FOR RENT
CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.
P and H. Lima and Manitowoc.
Top-Condition erection cranes
ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

ETNYRE DISTRIBUTORS
1500 Gal. Capacity — Price $3600.
Good Condition — Mounted on C.O.E. Autocar Straight Chassis
E. STEWART MITCHELL, INC.
3301 Ridgewood Ave. Baltimore 15, Md.

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

Save on 3 Clean Cranes
(1) MANITOWAC 2000 B, 45′ Boom, Cummings Diesel
(1) BUCYRUS ERIE 22 B 45′ Boom and Backhoe, GM 371 Diesel
(1) LORAIN TL 25 K Backhoe-Shovel Comb. Cat. D318 Diesel
R. J. KEHOE COMPANY
MARINE AND CONSTRUCTION EQUIPMENT
1 E. 42 St. Oxford 7-5695 New York, N. Y.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.
A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NLR 84.
WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

Used EUCLID Scrapers
5 only. Model 23TDT (six wheelers), with 15½ cu. yard scrapers. These units have rebuilt G. M. 6-110 engines with latest modification, Allison transmissions and torque converters. Equipped with 29.5 x 25, 28 ply drive and scraper tires. Located in Detroit, Michigan. We encourage inspection. These units are priced for quick sale.
CONTRACTORS MACHINERY COMPANY
13200 North End Ave. Detroit 37, Mich.

PIPE
Surplus New & Used
FOR SALE

ALBERT PIPE SUPPLY CO., INC.
PILING • PIPE • CULVERTS • VALVES & FITTINGS
ASBESTOS CEMENT PIPE • ALUMINUM PIPE
103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

ALL MAKES
RE-BUILT REPAIRS RENT REAL EXPERTS
BUFF

69 Day St., New York WOrth 2-2797

FREE
Latest list of used construction and industrial equipment. Shows PRICES and complete description. Send for your copy today.
SPECIAL—BUFFALO SPRINGFIELD
8-10 TON TANDEM ROLLER
POWER STEERING—$2,500
2020 Erie Ave. BA. 9-1950 Phila., Pa.
SERVICE SUPPLY CORPORATION

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW-USED
GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

GURLEY
FACTORY REPAIRS
Send your instrument directly to Gurley for repair, rebuilding, adjustment. Write for "Repair Service" leaflet plus 20-page "Surveyor's Notebook Tips."
W. & L. E. GURLEY
Dept. R, Troy, New York

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction
Reports — Examinations — Appraisals
Machine Design—Technical Publications
Boston — New York

Metcalf & Eddy
ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Edwards and Kelcey
Engineers and Consultants

Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark, New Jersey
Boston New York Baghdad

John Clarkeson
Consulting Engineer

Civil Engineers—Consulting Services
Highways, Airports, Bridges,
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

E. Lionel Pavlo
Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris
CONSULTING ENGINEERS

Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction

425 Lexington Ave. New York 17, N. Y.

Severud-Elstad-Krueger-Associates
Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

D. B. Steinman
Consulting Engineer

BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations.
Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

Lockwood, Kessler & Bartlett, Inc.
Engineers *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Robert W. Lowry, Inc.
Consulting Engineers

Robert W. Lowry M. Lopkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
227 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Pennsylvania Drilling Company

Subsurface Explorations. Grouting.
Industrial Water Supply.
Mineral Prospecting.
Large Diameter Drilled Shafts. Reports
1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling.
Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
575 Linwood Ave., N. E. Atlanta, Ga.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Engineers

Highways — Bridges — Toll Roads
Sewerage — Industrial Waste and Disposal — Water Works — Surveys — Reports — Design — Supervision — Consultation — Industrial — Municipal — Structures
611 W. Market St., York, Pennsylvania

SOUTH

Dignum and Associates
ENGINEERS

Civil Electrical
Structural Mechanical
260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates
Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations. Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Roy B. Everson
S.E. Consultant Since 1900

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems.
A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Mobile Drilling & Engineering Inc.
Foundation Engineering & Testing Division—Contract Drilling Division

Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.
960 N. Penn. Ave., Indianapolis 4, Ind.

Vogt, Ivers, Seaman & Assoc.
Engineers-Architects

Highways — Structures — Expressways
Industrial Bldgs. — Harbor Facilities
Airports — Dams — Docks
Surveys — Reports
34 W. Sixth St., Cincinnati 2, O.
20 N. Wacker Dr., Chicago 6, Ill.

Toledo Testing Laboratory
Engineers—Chemists

Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory
1810 North 12th St. Toledo 2, Ohio

Photronix, Inc.

offering an integrated process of
AERIAL PHOTOGRAMMETRY AND ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. Columbus 12, Ohio

ALWAYS READY

Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers

Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310 V.F.W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

INSPECTION & TEST

The Haller Testing Labs., Inc.

140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston Plainfield, N. J. New Haven

AERIAL PHOTOGRAPHY

Clyde E. Williams & Assoc., Inc.
Aerial Photos - Enlargements
Topographic Maps

At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
212 W. Colfax Ave. South Bend, Ind.

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction, City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

SURVEYORS

Alexander Milyko, P.E. & L.S.

Surveying parties, available for any location—Contract or per diem basis.
1124 New York Ave. Huntington Sta., L. I., New York

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest most direct method of contacting consultants who may be available NOW.

The Consulting Engineer

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

	PER WEEK		
	13 times	26 times	52 times
¾"—$14.35	$13.35	$12.45
1½"—$23.85	$22.30	$21.00

ADVERTISERS IN THIS ISSUE

Acker Drill Co. Inc. 78
Allison Div. GMC 99
American Vitrified Products Corp. 5
Armco Drainage & Metal Prod. Inc. 39
Atlas Powder Co. 31

Barco Mfg. Co. 58
Beech Aircraft Corp. 95
Belmont Iron Works 77
Bethlehem Steel Co. 46
Blaw-Knox Co. (Grating) 18
Brainard Steel Div. 9
Charles Bruning Co. Inc. 67
Bucyrus Erie Co. 36, 98
A. M. Byers Co. ..... 2nd Cover

Caterpillar Tractor Co. 28-29
Chain Belt Co. 75
Cleveland Tramrail Div. Cleveland Crane & Engr. Co. 83
The Cleveland Trencher Co. 117
Clyde Iron Works, Inc. 88
Concrete Reinforcing Steel Institute 76
Continental Motors Corp. 97

John Deere Ind. Div. 100
Dodge Div.—Chrysler Corp. 87
Dow Chemical Co. 108
Dresser Mfg. Division 48
Richard Dudgeon, Inc. 85

Esso Standard Oil Co. 32

General Motors Corp. Truck & Coach 50-51
Goodyear Tire and Rubber Inc. 1
Granco Steel Prod. Co. 90-91
Griffin Wellpoint Corp. 35
Gunite Concrete and Construction Co. 70

A. C. Horn Div. Sun Chemical Corp. 85

International Harvester Co. (Constr.) 105
Irving Subway Grating Co. 10

Jaeger Machine Co. 71
Jenkins Brothers 16
Jersey Bolt & Spike Corp. 78

Keasbey & Mattison Co. 69
Koehring Co. 102-103

Lefax Co. 70
LeRoi Div. Westinghouse Air Brake Co. 93
Leschen Wire Rope Div. H. K. Porter Co., Inc. 42
LeTourneau Westinghouse Co. 53, 55, 57 59
Lincoln Electric Co. 96
Link Belt Speeder Corp. 4
Louisville Cement Co. 112
Lubriplate Div. Fiske Bros. Ref. Co. 34

Mack Trucks Inc. 64-65
Mall Tool Co. Div. Remington Arms Co. 66
Marion Power Shovel Co. 45
Massey-Ferguson, Inc., Indus. Div. 13-15
Master Builders Co. ..... 3rd Cover
K. E. McConnaughay 54
McGraw-Hill Book Co. 127
McKiernan Terry Corp. 94
McKinney Drilling Co. 77
Miller Electric Mfg. Co. Inc. 70
Mississippi Valley Equipment Co. of St. Louis 82
Moretrench Corp. 81

National Clay Pipe Manufacturers, Inc. 80
National Gypsum Co. 106
Naylor Pipe Co. 63
Northwest Engineering Co. 3

D. W. Onan & Sons, Inc. 82
Kurt Orban Co. 85
Owen Bucket Co. 104
Ozalid Div. General Aniline & Film 79

The Peelle Co. 81
Peerless Pump Div. Food Machinery & Chemical Corp. 7
Phoenix Bridge Corp. 85
Frederick Post Co. 74

Republic Steel Corp. 72-73

S. Morgan Smith Co. 84
Sonoco Products Co. 40-41
Steelcraft Mfg. Co. 111
Stow Mfg. Co. 44
Stran Steel Corp. Div. National Steel Corp. 49
Symons Clamp & Mfg. Co. 2

Texas Co. ..... 4th Cover
Thew Shovel Co. 6
Timber Structures 56
Timken Roller Bearing Co. 11
Truck Mixer Mfgrs. Bureau 60
Truscon Laboratories 62

U. S. Rubber Co. (Tire & Mechanical) 20

Waukesha Motor Co. 68
Weil Pump Co. 77

Yuba Mfg. Div. Yuba Consol. Ind. Inc. 8

Professional Services 126

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 121-123
Special Services 123
Educational 123
Notices
Auction 123
Proposals 119-121
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 123-125

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 82,552

D. S. ROBERTSON, Advertising Sales Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

New York, 2—500 5th Ave.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen, D. L. Kates

Cleveland, 13—1164 Illuminating Bldg., 55 Public Square
F. P. DiToro, E. B. Mingle, Jr.

Detroit, 26—Penobscot Bldg.,
J. A. Houghton, R. I. Mace

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
E. E. Schirmer

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

Denver, 2—1740 Broadway
J. W. Patten

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,
Great Britain—Herbert Lagler, McGraw-Hill House, 95 Farrington St., London, E. C. 4
Europe—Michael R. Zeynel, Am Leonhardsbrunn 12, Frankfort/Main, Germany

ELECTRICAL CONSTRUCTION COST MANUAL

Just Published. Helps you save time and trouble in estimating electrical construction costs and to develop more realistic, profitable bids. Develops standard assemblies as a nucleus for unit costing of materials and labor; covers job factors, overhead, and profit; shows how to bring these factors together in an integrated cost system and estimate. **By Ralph E. Johnson, Pres., Sturgeon Elec. Co. 427 pp., 226 illus., $10.00**

ELECTRICAL SYSTEMS DESIGN

Brings you a complete picture of all that is best in modern practice in the design and layout of electrical systems for power, light, heat, signal systems, and communications. Shows how to select apparatus of the right type, size, appearance, or rating; how to work with the architect; how to design lighting systems scientifically, etc. **By J. F. McPartland and Editors of Elect. Const. and Maint. 140 pp., illus., $6.00**

NATIONAL ELECTRICAL CODE HANDBOOK

Just Published. Explains how to handle wiring and installation jobs in line with the 1956 National Electrical Code. Gives code rules in simple, clear language—tells WHAT they mean, HOW to apply them. Index lists code rules by job title for all types of electrical installation. Clear typesetting for quick, easy reference. **By A. L. Abbott. Revised by C. L. Smith, Elec. Field Engr., Nat'l Fire Protection Assn. 9th Ed., 642 pp., 394 illus., $8.00**

CONTRACTS, SPECIFICATIONS, and LAW FOR ENGINEERS

Just Published. You can insure greater protection in drawing up construction contracts with the help of this practical legal guide. Shows how to apply basic principles of contract law to drawings, specifications, surety bonds, instruction to bidders, and related areas. Scores of examples and sample paragraphs illustrate sound practice. **By C. W. Dunham, Assoc. Prof. of Civil Engrg., Yale U., and R. D. Young, Atty., Travelers Insurance Co. 550 pp., illus., $7.50**

10 DAYS' FREE EXAMINATION

McGraw-Hill Book Co., Dept. NR-4-3
327 W. 41st St., N.Y.C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Johnson—**Elect. Const. Cost Manual,** $10.00
☐ McPartland—**Elect. Systems Design,** $6.00
☐ Abbott—**Nat'l Elect. Code Hdbk.,** $8.00
☐ Dunham & Young—**Contr. Spec. & Law,** $7.50

(PRINT)
Name .....
Address .....
City ..... Zone.... State.....
Company .....
Position .....

For price and terms outside U. S. write McGraw-Hill Int'l, N.Y.C. NR-4-3

Good Way to Celebrate

FIFTY YEARS OLD LAST MONTH, the American Concrete Pipe Association celebrated this notable milestone in a notable manner—by issuing a new Concrete Pipe Handbook for the benefit of the users of what has become a truly engineered product from beginnings that were rule-of-thumb at best. There could have been no better way to emphasize the half-century mark. The handbook epitomizes the activity that most thoroughly justifies the existence of any trade association—product improvement through research—and the ACPA could look back with pride in this respect.

Founded in 1907 by the concrete drain tile manufacturers of Iowa, the association was only a year old when Dean Talbot of the University of Illinois started his famous research into the structural aspects of concrete pipe, to be supplemented soon by the work of Dean Marston of Iowa State College, which centered on loads brought to the pipe by the soil which covered it. Research followed on the action of corrosive waters, on the hydraulics of flow, on the formation of hydrogen sulphide in sewer pipe and on various other problems whose solution would permit a better and more uniform product.

As new fields of use appeared, the original small drain pipe for agriculture was supplemented by larger pipe for sewers, culvert pipe for highways and then pressure pipe for water supply. Each change fostered new research. It is interesting to note that prestressed concrete, manufactured by both the post-tensioning and pretensioning methods, has a 30-year service record on concrete pressure pipe, whereas it is being widely heralded as a new development today in the structural field.

The new handbook, planned and written by Howard F. Peckworth, managing director of ACPA, translates this 50 years of research into recommended design and construction procedures. Although the association is today concerned only with concrete sewer and culvert pipe (drain tile being the responsibility of the American Concrete Agricultural Pipe Association founded in 1950, and pressure pipe that of the American Concrete Pressure Pipe Association founded in 1949), all kinds of pipe are covered in the 450 pages of the handbook.

At its annual convention in New Orleans last month (ENR Mar. 27, p. 26) the members of the American Concrete Pipe Association were concerned with the whole gamut of matters that affect their business lives —manufacturing methods, product promotion, governmental relationships and the like—but they also had before them the fact that it was product research for the benefit of the consumer that justified their meeting at all. With a half century of such research to point to and a new handbook to codify the research results for the consumer, the American Concrete Pipe Association could look ahead with confidence. It had celebrated its fiftieth anniversary in the best way possible.

And as a last thought, and a comforting one, the ACPA celebration need not be unique. There are numerous other trade associations in the construction industry with the same opportunity to celebrate an anniversary by a special deed of service. Some already have, and others will; and therein lies one of the great strengths of American construction.

Completely Out of Order

A REQUEST BY A GROUP OF ENGINEERS in the Los Angeles area affiliated with the AFL-CIO that their union label be placed on engineering drawings on which they have worked was promptly and properly turned down last fall by the city's Board of Public Works. Both the Los Angeles Section of the American Society of Civil Engineers and the Consulting Engineers Council adopted resolutions commending the city's action. It might be salutary if other organizations would take similar action on the matter.

If the unionized engineers made their request after carefully analyzing its implications, it borders on the impertinent. If they didn't think it through, and just made a wild pitch on someone's bright idea, they would increase their stature as engineers if they would disavow their original action.

Engineering drawings are not articles of commerce, like overalls, kitchen utensils and toys on which union labels are sometimes stamped. They are, instead, graphic expressions of technical conclusions reached by a professionally competent engineer, who signs his name to them to attest his responsibility for their accuracy and adequacy from a public safety standpoint.

Except for the name of the owner and the title of the drawing, which are necessary for identification and filing purposes, no stamp or insignia other than that of the engineer responsible for the design should appear on engineering drawings. Otherwise, as the ASCE Los Angeles Section resolution correctly points out, a divided responsibility is implied. Moreover, as the California State Board of Registration for Civil and Professional Engineers has ruled, the use of any other insignia than the seal of the engineer responsible for the design would be inconsistent with the law.

If engineering drawings should ever be degraded to the status of advertising billboards, which in effect the use of a union label would tend to do, the entire profession of engineering would share in the degradation. Requests to stamp advertising messages of any sort on engineering drawings required to be signed by a registered professional engineer are completely out of order. They should be rejected in the interest of professional integrity and public safety.

WORLD'S LONGEST SUSPENSION BRIDGE

Better Control of Lightweight Concrete Workability and Shrinkage with POZZOLITH*

Mackinac Bridge, Michigan
Owner: Mackinac Bridge Authority
Consulting Engineer: Dr. D. B. Steinman
Associate Consultant: Glenn B. Woodruff
Substructure Contractor: Merritt-Chapman & Scott Corp.
Superstructure Contractor: American Bridge Div. U. S. Steel Corp.
POZZOLITH Ready-Mixed Concrete: Louis Garavaglia Co.

Below: Determining Workability with Kelly Ball — observing penetration into fresh concrete.

Workable, lightweight concrete, with 2½"-3" slump . . .
Good cohesiveness and reduced shrinkage . . .
Strength: 4250 psi average at 28 days—3000 psi specified . . .
. . . these are several of the benefits obtained with POZZOLITH in the lightweight concrete filled floor sections of this $100-million structure.
One of our fieldmen will be glad to demonstrate—at your desk or on the job—the important advantages of POZZOLITH for your projects.

*POZZOLITH — Master Builders trademark for its time-tested water-reducing, air-entraining admixture for concrete.

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.
General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*

Laying one course of the 7½-inch Texaco Asphaltic Concrete foundation on US Route 301 in Sussex County, Va.

Contractor
Adams Construction Company, Roanoke, Va.

What type Asphalt pavement for Interstate Highways?

Virginia supplies one answer to that question on the new northbound lane under construction on 11 miles of US Route 301. The most heavily traveled north-south truck route across Virginia, US-301 is part of the new Interstate Highway System.

The foundation for this important project consists of a 7½-inch thickness of coarse-graded, plant-mixed Texaco Asphaltic Concrete, laid in three courses on an 8-inch subbase of selected borrow material. The wearing surface is plant-mixed Texaco Sand Asphalt, laid to a compacted thickness of 1½ inches.

This is one of a number of heavy-duty asphalt pavement designs suitable for Interstate Highway traffic.

Asphalt highways are equal in durability, lower in average upkeep cost, superior in riding quality and *cost substantially less* than rigid highways having the same load-bearing capacity. The important savings afforded by Asphalt become more and more vital to highway officials and motorists, as a result of currently rising road building costs.

Helpful information on methods and materials recommended for all types of Asphalt construction for highways and streets is provided in two free Texaco booklets. Copies may be obtained without obligation by writing our nearest office.

The existing asphalt pavement on US-30 will be the southbound lane of the new divided Interstate Highway.

Section of the Plant-Mixed Texaco Sand Asphalt wearing surface on new, northbound lane of US-301.

ENGINEERING · RESEARCH · EDUCATION · THE ASPHALT INSTITUTE

MEMBER

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3, Philadelphia 2 Richmond 19

TEXACO REG. T. M.

TEXACO ASPHALT